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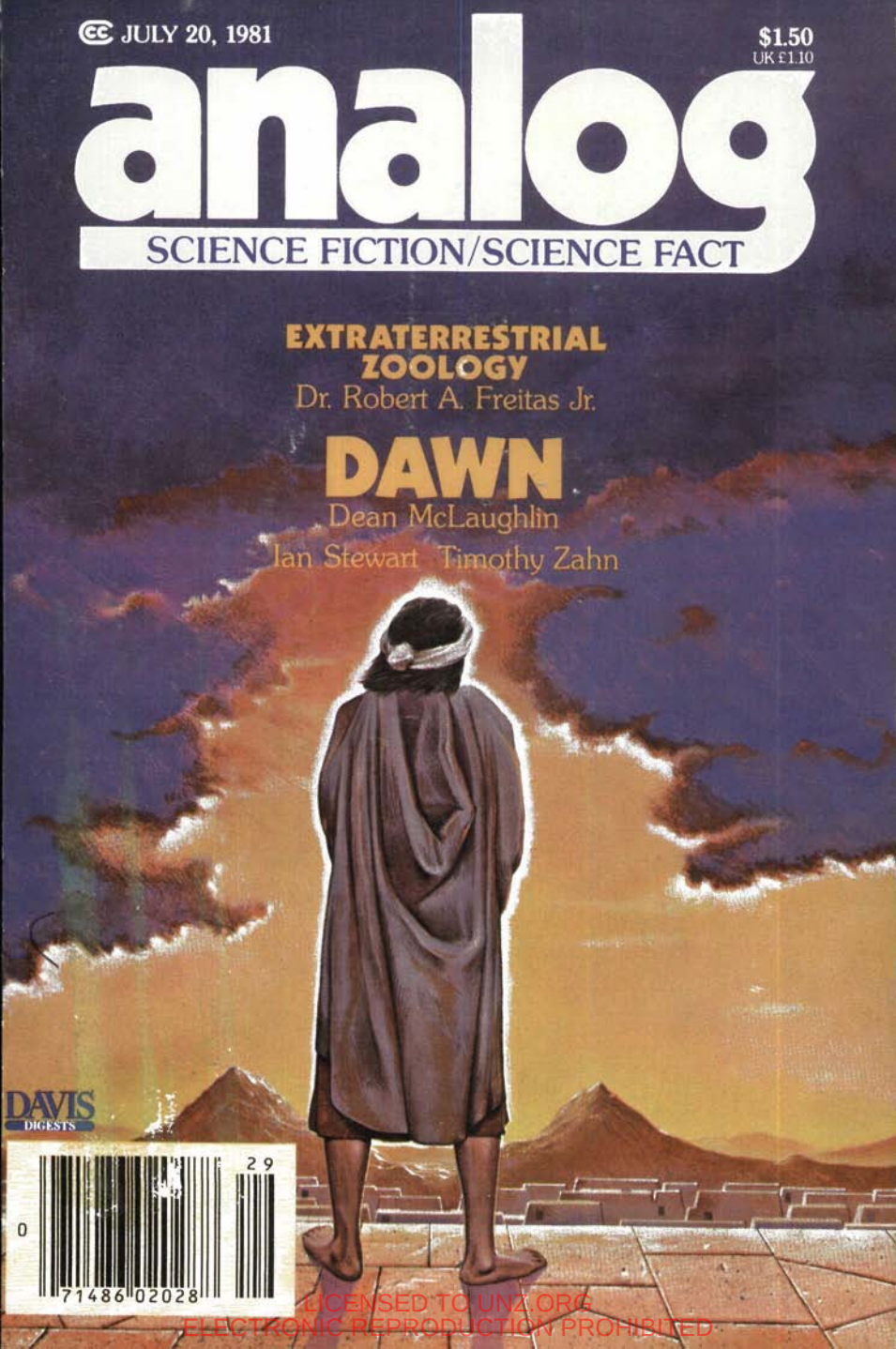

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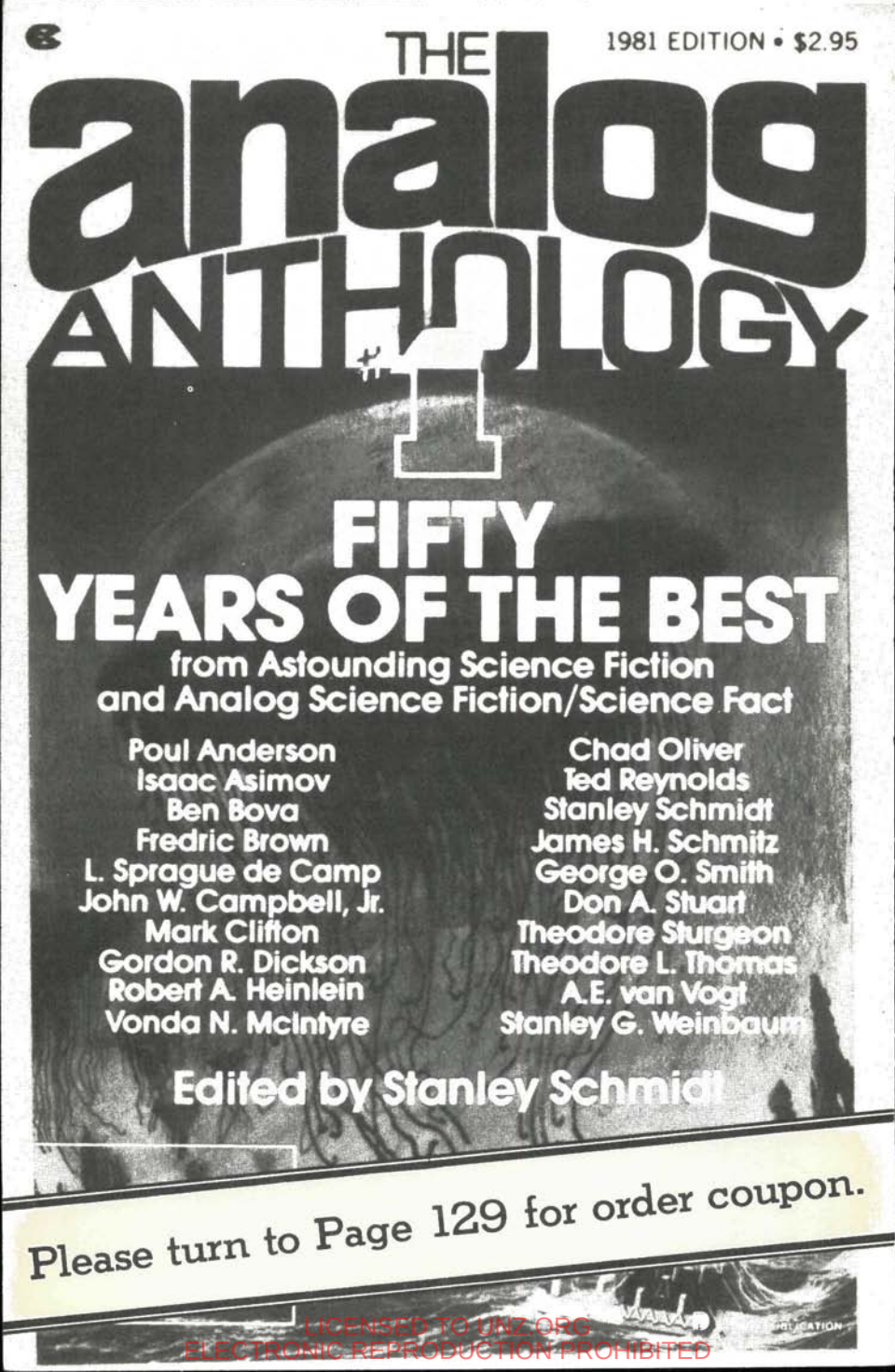

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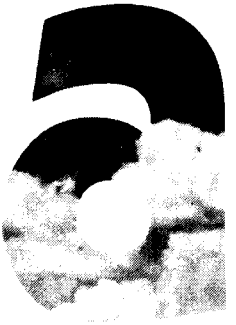

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Guest Editorial

The Prevention of War: About Unthinking the Thinkable

Reginald Bretnor

When a course of action or pattern of behavior ends over and over again in results directly opposite to those it is allegedly designed to achieve, we should (before continuing in it) examine the functional relationships between its words and actions, actions and results, to determine whether the claims made for it have any validity.

An excellent example of this was the centuries-long practice of bleeding patients for any number of misunderstood diseases and conditions. Almost none* recovered because of it (unless in some cases it acted as a placebo) and it was the immediate cause of unnumbered deaths even after anatomical and medical science had demonstrated its irrationality. (Not too many years ago, leeches and "cupping" devices were still available at many pharmacies.)

A parallel example, and the one which concerns us here, is the history of mankind's attempts to prevent war and ensure lasting peace. As a clearly defined and loudly announced objective, this hardly dates back earlier than the mid-nineteenth century, and thus far it has developed two means only: treaties and disarmament agreements arrived at between governments, and international organizations to which governments may or may not belong. (and whose rules they are not compelled to follow).

The world we live in is an eloquent witness to their ineffectiveness, and when Herman Kahn made his famous statement about thermonuclear war—that "we must think about the unthinkable"—he was, intentionally or not, commenting on this failure very pointedly.

Let us first consider the *word* disarmament. It is a word of promise, holding within itself its entire argument: *take away the tools of war and war will cease*. Unhappily, it is not the tools, but their users, who make war. ("Guns don't kill people—people kill people.")

*In certain rare cases it does have limited utility.

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This has been true since the first caveman clobbered his neighbor with a stone. Like man ever since, he was a technological being, even though his society was scarcely technological in the modern sense—and it is literally impossible to disarm *completely* any technological being who remains free; doubly so to disarm a technological society. A technological society cannot be disarmed *even if it wants to be*. At what point does an interplanetary vehicle become an ICBM? Or a supersonic airliner an intercontinental bomber? Or a peaceful fishing boat (with a hydrogen mine or two aboard) a warship? Or a caterpillar tractor an extemporized battle-tank? Not as efficient as the professional models, true, but still far more deadly than any of the instruments with which Genghis Khan and his successors conquered most of their known world.

Essentially, this is what makes the word *disarmament* a carrot on a stick and nothing more.

Yet donkeys keep on following such carrots day after day and generation after generation.

Since the Czar of Russia called the first disarmament conference at the Hague in 1899, dozens have been convened—hundreds, if one counts the routine procedings of the League of Nations and its child, the United Nations—and innumerable solemn treaties have been signed; thousands of books and tens of thousands of articles and learned papers have been published on the subject; and the number of speeches delivered concerning it is simply mind-boggling.

What is the net result? We have outlawed the dumdum bullet—and anyone who has ever seen a shell-fragment or who is familiar with what a jacketed bullet out of an AR-15 can do can appraise the value of *that* accomplishment.

Now we have SALT I and SALT II.

Disarmament has most certainly not preserved the peace of the world, so let's consider the next major instrument proposed in our century: the world organization. There have been two: the League of Nations and the UN. The League was senile, toothless, and impotent at its birth. It perished with World War II and it was not revived under its old name after that war simply because everyone knew its flaws, and to be successfully revived it would have had to be reformed. Instead, its flaws and weaknesses were perpetuated by the simple ad-man's expedient: *It stinks? Change its name*. The UN was born, and even given new flaws and weaknesses peculiarly its own. Today it is nothing more than a playpen for savages and semi-savages, and an arena for manipulators out of Moscow. The closest it ever came to preserving the general peace was when the Security Council—in the absence of the Russians, who happened to be off sulking and pouting—made war against Communist aggression in Korea.

Another carrot-on-a-stick? Indeed yes.

The idea that either the effort towards disarmament or our continued support of the UN in its present form is going to establish—let alone preserve—the peace of the world is, if we look at it fearlessly and frankly, indeed unthinkable. Both are instances of the failure to think things through, of wistful dreams drowning out practicality, of behavior

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which—certainly in the West—has now become ritualized and compulsory.

Thinking About the Thinkable

Very well, then, what *is* thinkable? The question can perhaps be better answered by putting it in the past tense: what has been thinkable in the past? In other words, what has worked to keep the peace historically—on those rare occasions when, at least generally speaking, it has been kept for relatively long periods of time?

The answer is very simple: *empire*. That means *union under one authority*. It can be empire by *force majeur*, or empire by agreement. The Russian Empire was—and *is*—an example of the first. The Swiss Confederation can be taken as an example of the second. The British Empire has, to a great extent, been both. An empire can start as one and end up as the other—but the word fits, and I use it here deliberately, for were I to disguise it (as one so easily can) I would nonetheless be labelled an imperialist.

What does *empire* mean? Essentially, it means a strong central government, preferably acting according to a code of law, supported by the force necessary to keep it in the saddle, and ruling over a diversity of peoples, languages, and cultures. Most certainly, it means some surrender of absolute sovereignty by its various member groups and nations: no civilized empire could or would tolerate a Pol Pot or an Idi Amin; nor would it tolerate a Hitler or a Stalin; and had we of the civilized West had the courage and the imagination to establish such an empire after World War II—if necessary forcing it down totalitarian throats—then the world might not have had to continue tolerating tyrants great and small, and blithering about human rights might not have become the travesty it is today.

We would not have had to call it *empire*. We could have called it the United Nations Organization, or any other pretty name that occurred to us. But it would have functioned according to Western concepts of law and justice and man's liberties.

Then why didn't we? It is not enough to say that all we Americans wanted was to "bring the boys home," which was true enough. Most of us were satisfied with the ritual dances of our statesmen and politicians: the Disarmament Dance, the One World Dance, the Three Freedoms Dance, and so on. (In the United States, at least, those who were not satisfied usually took refuge in the ritual dance of isolationism—in a world which, in terms of speed of communications, had become smaller than the original thirteen colonies.)

The majority had, unhappily, swallowed several Great Simple Myths, some of which had roots in the American past, and all of which had become virtually the religious tenets of liberalism. Here they are:

- All peoples, everywhere, want peace.
- Only their wicked leaders—kings, dictators, militarists, and of course arms dealers—want war.
- All peoples everywhere, regardless of their cultural backgrounds, religious beliefs, institutionalized hatreds, and education or lack of it, are really just displaced Vermonters, yearning to go to town meeting, exercise the demo-

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cratic process, and squabble peacefully (if at all) with their good neighbors.

●All cultures everywhere are of equal value: all they need is for us to *understand* them.

●Given any opportunity, any culture—no matter how retarded, how vicious, or how apparently opposed to everything we ourselves consider good and true and beautiful—will (what a lovely word!) *emerge* into the glorious light of civilization.

●Therefore there are no savage nations, no backward nations, no nations that need more than government by their own leaders and lots of American financial support (plus plenty of Russian arms and a contingent of Cuban janissaries) to achieve equality with the United States, Great Britain, France, Sweden—you name it.

The only trouble with these pretty myths is that they are unadulterated bullshit.

All peoples everywhere do *not* want peace—if by peace we mean peace for all *other* peoples everywhere. Many individual men and women find war exciting; many are sadistic; many are susceptible to the exhortations of the inordinately ambitious, the fanatical, the lunatic. If the great majority *really* and actively wanted peace, there'd be no problem.

All peoples everywhere do *not* have democratic aspirations. Many of them still want to kill their neighbors, rob their neighbors, enslave their neighbors, or even serve their neighbors up for supper.

All cultures are most certainly *not* of equal value—and the more clearly we understand them, the more obvious that becomes. Some imperialists, like the British, did understand this, and usually had the good sense not to give first-rate modern weapons to peoples who had not absorbed the Anglo-Saxon concepts of how men should live with one another, and by what rules. There is absolutely no natural law dictating that cultural *emergence* will follow either prosperity or the acquisition of Western technology and its products. (Take a look at Libya. Take a look at Iran. For that matter, take a nice long look behind the Iron Curtain.)

Therefore all peoples, and all nations, are *not* equal. All cannot be trusted equally, either with the powers inherent in science and technology or with absolute sovereignty. One reason that the UN is an almost total failure is because it is based on the assumption that—except where *size* is concerned—they are.

Now, given all this, how could any world organization have succeeded after 1945?

Very simply, any organization—an army, a private club, a political party, a nation, a Boy Scout troop—must have a common code of behavior for its members. It must have the means to enforce this code, and to discipline (or at least to expel) any who violate it.

Where a world organization is concerned, this means at least some uniformity in each member nation's body of domestic law. Certain human rights *must* be uniformly guaranteed. Certain individual and collective acts *must* be uniformly prohibited. It is, for instance, ridiculous to expect a dictator legally free to preach and launch a holy war to

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be a reliable member of our world club; and it is just as absurd to expect this reliability from a power group legally free to quell any opinion contrary to their own and to preach and plan the violent overthrow of the governments or economic systems of their fellow members.

Outlawing War

This brings us to the second really effective measure in the prevention of war, one which has actually been put into limited effect, one which is eminently thinkable. It is very simple: no nation forbidden to go to war *by its own laws* has ever done so. The two notable examples are Switzerland and Uruguay; in both, the government is legally forbidden to make war unless the nation is physically attacked—and it is axiomatic that one's own law carries more force than any agreement with a foreign nation or group of nations. Douglas MacArthur, so often damned by liberals as a militarist, saw this clearly and therefore incorporated the provision in the post-war Japanese constitution.

Such a provision should have been, and eventually *will have to be*, the first basic condition for membership in the United Nations—or in whatever world organization follows it.

Let us assume that, in 1944, we had had the good sense to launch our second front up through the Balkans—as Winston Churchill wanted to—instead of into France, thereby isolating Russia from much or all of Eastern Europe. Let us assume, too, that in 1945, instead of letting Russia into the war with Japan—remember, all through the war the Russians were *not* our allies there—we had had the imagination and the courage to move in force against the Japanese armies in Korea and Manchuria, thereby saving North Korea from the easy Russian takeover it suffered. Let us further suppose that, when we formed the UN in San Francisco, we had insisted on limiting membership to nations willing to subscribe to an acceptable code of behavior. No one would have been excluded *except for cause*. No one would have been compelled to join.

The Soviet Union would, almost certainly, have remained on the outside looking in. So might some of the "emerging" nations. But had we had the good sense to limit our financial, scientific, and technological support to members of the club—to those who obeyed the rules—we would have ensured a world organization vastly different from what it is today. If the Communists had refused to mend their ways, they would have had to pull themselves up by their own bootstraps—and they would not now be in the position our bootstraps have put them in: able to disturb the world's peace on every continent, pose a serious threat to our once preeminent power position, and even endanger our access to vital strategic minerals and materials. The United Nations then would probably have had, at least temporarily, a smaller membership—but its world would have been a far more open one, an infinitely freer one, and a much more prosperous one.

Which brings up another interesting

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question: for what would happen even today if we—and perhaps the British and West Germans and French and Scandinavians and all other non-totalitarian nations everywhere (if anyone could get them to agree) were to withdraw from the UN, expel it from United States soil, take over those of its agencies we support already, and form our own private club, functioning according to more civilized rules? And what would happen were we to confine our massive aid to those nations that chose to join us under these rules, sending no more vast grain shipments to the Russians, no more arms except to our declared allies, no more help of *any* nature to our avowed enemies?

I suspect that then our strength and our integrity would bring us more firm friends than our policies have won during the past thirty years, three decades during which we have tried to buy and beg the friendship of still-inferior nations, some of whom hate us, some of whom despise us, and most of whom used to have a healthy fear of us.

As a world, as one people, we finally are confronting space, the great adventure of our time.

We still have *no* idea of what—or whom—we will encounter there. We may need *desperately* to be culturally more coherent than we are, more genuinely united than the UN pretense lets us be, and far more uniformly civilized in the sense of our respect for the rights and liberties of others.

So why don't we at least start thinking about the thinkable? ■

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Dean McLaughlin

DAWN

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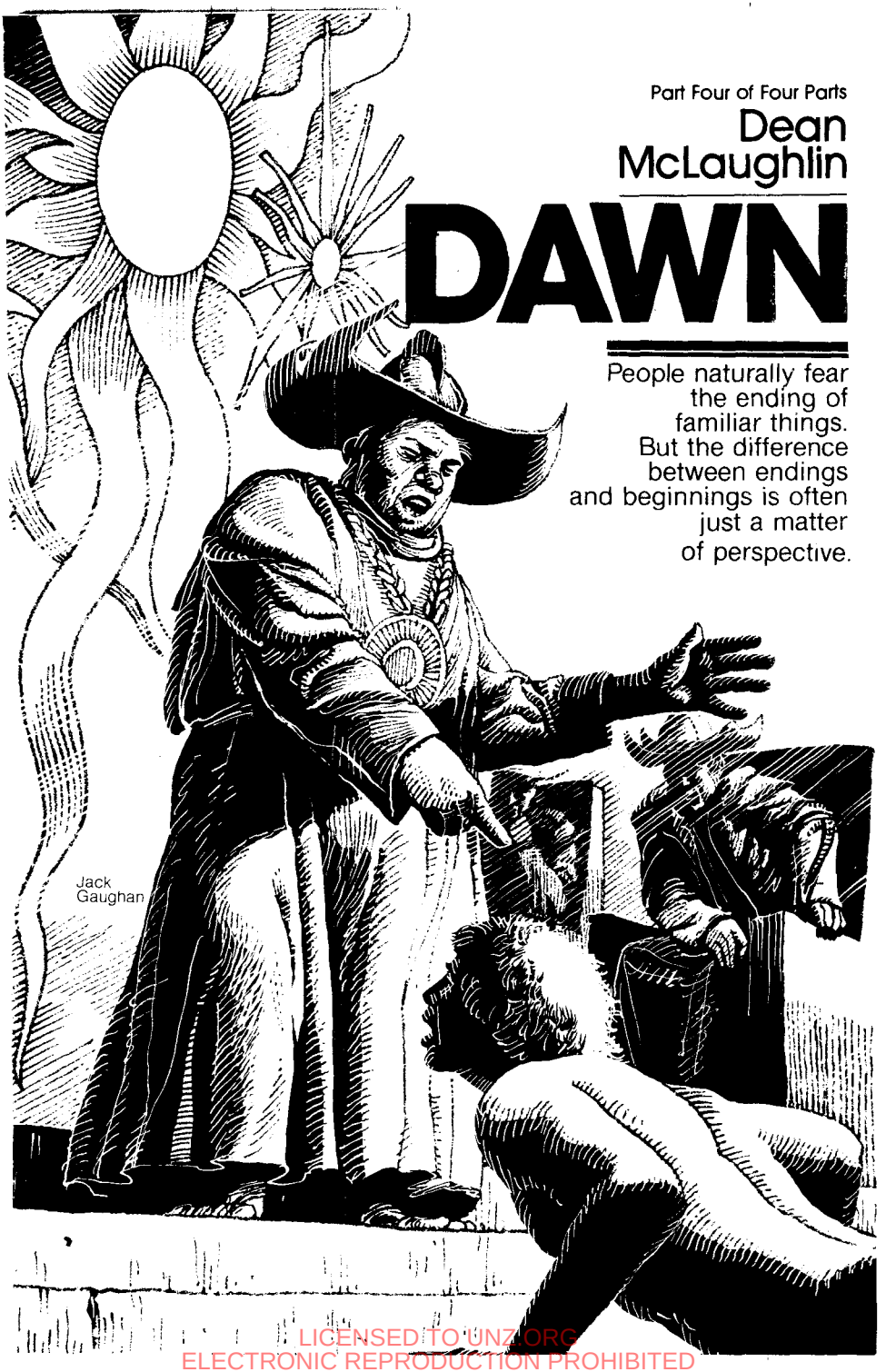

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Synopsis
Parts I, II & III

On a world nameless because, so far as its people know, no others exist, young ISAK, an informally trained scribe, thought he needed only to tell the Temple's Council of Brothers of his foretelling that the gods would cause a time of darkness to happen and he would be believed, honored, possibly rewarded. In any case, it was the proper thing to do. Dubious and cynical, the hierophant ARTANEEL, at whose shrine Isak had taken service, agreed to arrange his audience before the Brothers.

Neither SEDMON nor the lesser Brothers, nor their Legate Priest, BALCHIN, are impressed. Since never in memory have the gods permitted to happen even a moment during which at least one of them did not stand in the sky, watching and giving light, the possibility that such could happen is beyond belief. And Isak has admitted the foretelling came to him by rational thought, not revelation.

The power of the Temple is based on knowledge. No man doubts that the gods control the world's seasons and its climates, the tides and the run of eels in the river, and that they reveal their intentions for the world by how they stand in men's sky; the ever-changing sequence of their rising, the constantly shifting angles of divergence of their shadows from the foot of a shadow post, and by how far those shadows extend. Equipped with its Archives of records reaching back many generations, the Temple and only the Temple can produce a foretelling of the likely prospect for an enterprise, be it agriculture, commerce, fishery, or the hunt. Not even the Temple, though, has been able to foretell how the gods would share the sky at some future moment; the gods are gods, and therefore unknowable.

Isak, not sufficiently schooled to know it was impossible, solved the puzzle. He found that the gods were completely predictable. By that course, he chanced on the discovery that the Pale One, who alone of the gods (if, indeed, she truly was a god) did not shed light but stood only as a perfect white disc in the sky, would pass in front of Actinic Gamow at a time when he stood otherwise alone in the sky; all the other gods would have gone below the horizon. For the first time in memory, there would be darkness.

Scorned by the Brothers, disappointed and bewildered, Isak begins with Artaneel the long walk down into the city. Artaneel scolds him for his naïveté. Before they reach the foot of their descent from the Temple's height their way is blocked by a squad of Temple Guards accompanied by an ambitious underling from Artaneel's shrine who points out Isak as the false prophet and Artaneel as his advocate. Artaneel, who until that moment had thought himself in no hazard, having done no more or less than a hierophant should, tries to flee and is killed.

Taking advantage of the confusion, Isak escapes, killing a Guard in the process, and finds uncertain refuge as a prisoner/guest in the household of PALOVAR and his pregnant daughter KALYNN. They hide him in an underground vault under the watch of their aging servant, HOBUR. He tells them of his foretelling and how he came to

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find himself in their garden. Kalynn is sympathetic, perhaps because she broke a pot over his head while capturing him. Palovar is more skeptical.

Quickly, Isak discovers they are involved in a conspiracy against the Temple, something he had never imagined possible. To be against the Temple was to be against the gods; and how could a man be against the gods? For their part, Palovar is not sure Isak is a genuine fugitive; he might be a provocateur in the Temple's service. Even if genuine, they warn, men higher in the conspiracy may decide that to keep Isak carries too great a risk; still scouring the city, the Guards might search the house again and find him, while releasing him for possible capture by the Guards would entail a similar risk. The Guards might persuade him to talk before they split his tongue, the fate of false prophets.

"You would kill me," Isak says.

A third possibility exists, Kalynn's suggestion: he might be useful to the conspiracy. To explore that question, he is visited in his hiding place and sharply interrogated by two persons whose importance to the cabal is suggested by the fact that they come masked. One, identified by Kalynn's tongue-slip as EB, shows himself to be a formally trained scribe; the other, just as obviously, is a man of power among the conspirators, perhaps the leader himself. Though he is nameless, Isak comes to think of him as HIS LORDSHIP. As they depart, still undecided—for Isak has told them much that Eb must investigate—Kalynn lingers behind: she has noticed how Isak has passed his idle captivity scratching notes in the grease on serving boards on which his meals were brought, trying by careful thought to extend his understanding of the gods. She offers to bring waxboards, possibly even some parchment and writing tools.

"I would like that very much," Isak says.

It is the beginning of an awkward, ambiguous relationship. Though not permitted out of his hiding place, he is now more guest than prisoner, she more hostess than jailer. Except for Hobur, she is the only person he sees, but she spends much time with him. They talk. He teaches her how to read a post's shadows, and she brings him readings from the post in the garden. He discerns that the post's marker tiles are incorrectly positioned, and teaches her how to calculate the corrections. She is a quick and eager student, curious about the gods and almost everything else. Yet it is she who explains to Isak how his foretelling threatens the base of the Temple's power; it would suggest the gods are displeased with how the Temple has used that power. And Isak has to concede corruption is not absent from the Temple.

She considers even that an understatement.

"You hate the priests," he says.

She admits the truth of it. Then she tells him why, tells him how, by accident of having caught a priest's eye at the wrong moment, she was chosen bride of the gods on the occasion of Red Bethe's most recent overtaking of Blazing Alpher, was conducted through the ceremonies of observance at the Temple, drugged, and finally raped repeatedly by that same priest and possibly others, becoming pregnant as a result.

That to have been chosen bride of the

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gods might be considered an honor does not impress her. Suitors who might have contested for her at bride auction have turned their attention elsewhere. Her self-worth injured, she asks Isak if he would have lost interest, as they had. Wanting neither to hurt nor speak a word that is not truth, Isak protests he has not so much as a farthing.

"But if you had a farthing?" she asks.

He insists the question is meaningless. He has no coin. He is a fugitive whose tongue the Temple would split, and whom the cabal might kill for lack of knowing what else to do with him.

"We'll just have to do something about that," she says.

Knowing death is likely and fearful that his discoveries about the gods would be lost—would the gods wish that to happen?—he begins to teach Kalynn how to foretell how they will stand in the sky. Her education has advanced hardly past a beginning, though, when her father abruptly calls her away. Shortly thereafter, Isak is taken from the hiding place, sealed inside a winebarrel, and carted away. Though Kalynn has tried to assure him he will not be harmed, he does not know if he should believe. What he believes matters little, however; he has no control, not even of his own life.

In a warehouse on the riverfront, His Lordship interviews Isak again, takes his measure, and invites him to work for the cabal. Knowing that to refuse would mean death, and having few illusions as to the sort of man His Lordship is, Isak still has come to understand—thanks to his conversations with Kalynn—that it is possible to serve the gods without also accepting the rule of those who hold the Temple; that, perhaps, only by seeking the Temple's overthrow can the gods be properly served.

"What must I do?" he asks.

"Much," His Lordship replies.

He becomes the Prophet. Rumor of his foretelling has already been spread through the city and the surrounding land. Now he himself goes abroad, repeating it himself, not as hearsay but as given truth, and saying also that the time of darkness will be a warning from the gods who, displeased with how the Temple serves them not, would have men revolt against the Temple's rule. He is hailed and honored, sought as an oracle, credited with miracles. Within, he is troubled; it is only a foretelling overlaid with sophistry. Yet, for all that, he wants to believe he serves the gods.

Condemned by the Temple, sought by its Guards, he is protected (kept in line?) by armed men His Lordship has provided, and a network of runners brings warning of approaching Guards. Hordes of believers and citizens dissatisfied with the Temple's rule flock to him; for many have felt ill-fortune and believe it to have been a sign of the gods' displeasure. Even some of the Temple's own Guards begin to doubt the right of their masters to hold power. Isak watches the sky, sees the pattern of the gods' standing slowly change toward the configuration that will bring the darkness. He wonders what the gods would truly have happen, what fate they will give their servant when they are done with him. He has no reason to think them benevolent.

In a crowded marketplace at the edge of Old Town, Kalynn finds him. He has

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not seen her since he was taken from the Palovar household, and has wondered if he would see her again, and wanted to. Her child is still not yet born. She says she has wanted to talk with him, but does not explain. A few of her words make him realize that, to His Lordship, a dead Prophet might be even more useful and less troublesome to the revolt than a living one. He wonders if she has come to warn him, but she is as startled as he by the idea. They have time for only a few more words before they are surprised by the sudden appearance of Guards, come by stealth, who have sealed off all ways out of the marketplace. Isak tries to escape by slipping into the cleft between two buildings and climbing to the rooftops. The rough bricks gash his hands, feet, and body. When he reaches the top Guards are waiting. They seize him and sprawl him on the roof tiles and hold him there under the points of their swords.

A battle-shod foot thrusts hard against his side. "Some Prophet, eh, lads?" one Guard says, and chuckles.

PART FOUR

> *If the stars should appear one night in a thousand years, how would men believe and adore, and preserve for many generations the remembrance of the city of God!*
>
> *—Ralph Waldo Emerson*

The cell was too small for him to lie down. The earth floor was damp, and the rushes had been there so long they were indistinguishably commingled with the dung of vermin. A narrow slot not a hand's length across let in a sliver of light. He slouched with his back against the wall, finding in the cool hard substance of the stones some measure of relief from the burn of his unattended sores.

Now and then he could hear the tread of feet in the corridor outside the iron door, and now and then sounds not so identifiable from farther off. Several times a spy hole clacked open and he was thrown a handful of crusts, table scraps, and a bladder of water. Once he heard the crash of another metal door being slammed; the sound of it reverberated. Then there was silence for a time which ended with a scream that stopped as if chopped down. The silence after that dragged long.

He found a slops jar for his needs half concealed in the thick shadows, none too clean. For a while he watched the scrap of sky which was all he could see, but the play of light and shadow on the occasional fluffball clouds told him the slot looked to the north, a part of the sky through which the gods never passed. He could measure their passage by how they tinted the clouds, but most of the time the sky was blue and clear.

It was a time to think, something he had not had since his career as a prophet began. But though there were questions that needed close examination, he could find no shred of fact to give him insight. He wondered if his capture had been the result of betrayal—some part of His Lordship's scheming he had not expected until Kalynn had suggested it. It was possible. At the moment of darkness, a dead Prophet could be as useful to His Lordship as a live one. Perhaps more useful; a living Prophet would

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need to be dealt with afterward. But equally the Guards could have found him by their own efforts. They had needed no help to capture him; only skill and the turning wheel of chance. No evidence proved one hypothesis more likely than the other.

It was hard to believe, though, that Kalynn would have been part of such a scheme. That was a thing he did not want to believe. Nevertheless she could have been as much a gamepiece as he was himself; a convenient tool to be used and cast aside. He thought back over all she had said and how she had said it, tried to remember every stance, every gesture, the look on her face, the tilt of her head. She had never explained why she wanted to talk with him, had not told him what she had wanted to say; nor could he grasp her reason for saying the things she had said. People were not, of course, wholly rational beings, Kalynn no more than anyone else, though he had been well impressed by her calm good sense, her intelligence, her seemingly instinctive grasp of the way the world of people functioned. And why had she shouted as he fled the Guards that she wished he had fathered her child? It was more than he could understand.

It was useless to speculate. The Temple had him like a vole in its fist, and he would soon be dead. The only uncertainty that remained was how quickly, and the means by which it would be done. He would die not knowing the truth to the questions he pondered. Therefore they did not matter.

He had been in that cell, as near as he could measure, a full passing when footsteps paused outside the door. A massive bolt was thrown with grinding force and the door clanged open. A priest stood there in the lamplight. Shadowy behind him, a Guard loomed, lamp held high, sword low.

"So, young Prophet. For yourself, perhaps darkness indeed."

Did he know that voice? "For all of us," Isak said. It surprised him to hear such words from his own tongue; once he would not have dared speak thus to a priest.

The priest's reply was a curt gesture. "Come."

Isak did not move at once. He had the feeling of having been through it all before. The priest turned away. "Bring him," he told the Guard, and strode away.

The Guard advanced to the open doorway. The tip of his sword came up, moved aside as if making ready to chop. By then Isak was slowly getting to his feet. The Guard backed into the corridor and motioned him to come. Isak stepped out. His legs had little strength, and with each step his battered knees blazed as if licked by fire. Far ahead down the corridor, in the light of an acolyte's lamp, the priest strode on. The Guard nodded Isak in the same direction. Behind them a second Guard followed.

The floor was uneven stone worn smooth by an eternity of footsteps. Isak stubbed a toe almost at once, bringing new flame to the ember of pain already there. After that, he tried to walk carefully. The Guard who followed tried to hurry him with a fist against his back, indifferent to the sores that were there.

"And when the darkness comes?" Isak murmured, and had the satisfaction of feeling the fist's thrust slacken.

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The corridor gave into a larger passageway, and the passageway in its turn to a broad flight of stairs that twisted upward and upward until Isak wondered if the Temple's highest tower could ascend so high. Alpher was standing well aloft, with the Twinned Ones close behind, and at intervals their light came in through narrow high arched windows that laid thin stripes of brightness—white, gold, and red—diagonally down the steps, leaving much else deep in shadow. Scurries of acolytes hurried past with armloads of wax boards and parchment, some downward, some ascending; they gave Isak a wide berth, and when he looked at them they seemed to cringe and turn their own eyes away.

Isak's pace slowed. His legs ached and seemed to lack both strength and steadiness. The Guard leading the way, now almost half a turn ahead, stopped and scowled down. The Guard behind Isak took it as a command to prod him. Isak stopped, stoic to the pain, turned, and knocked the sword aside with his wrist.

"I have no eagerness for this," he said, looking down at the man. "I will go where the gods would have me go, but not with haste."

The Guard would not meet his eyes.

"Serve the gods," Isak told him, "so long as you are certain it is the gods you truly serve." He turned and resumed the climb. Cowed, the Guard did nothing to hurry him.

Landings led off the stairway, and through the arches Isak glimpsed halls where scribes and acolytes labored at benches while supervising priests moved serenely among them. Off one landing lay a corridor with richly tapestried walls and large carved doors set with great hinges of hammered bronze. In one of the nearer doorways a woman paused, hand to throat as if surprised, as she emerged. For a long moment she stared at Isak. She wore a fine linen shift with an orange scarf at her waist, and a jeweled gold plectrum on a chain below the hollow of her throat. She was not as young as the cosmetics on her face tried to make her appear. Their eyes met for only an instant. She backed away and closed the door.

"Ho, Belar," chortled the Guard behind Isak. "Would you believe our Keddie be taking instruction off Old Singlefang?"

The one who led the way spoke over his shoulder. "I'd not have thought he be able."

"Still has a finger, do he not?"

"Nah. All they be limp as noodles also. And with those fingernails?"

"Ah well, perhaps she does but help him to remember."

Isak took advantage of the ribaldry to pause and rub his left knee, which felt as if grit had worked in between the bones. The Guard who had been following moved up next to him. With a glance and a nod he indicated he had noticed. Isak saw that, under his helm, he was not much older than himself. "We be commanded to deliver ye," the young Guard said, "and it go rough for us if we be slow. Ye still be able?"

He sounded honestly anxious. Nevertheless, he wore the Temple's leather. "It goes hard because you serve them," Isak said, and with a hard glance forced the Guard to look away. He tried a step; it was like kneeling on a knife blade but, if he must, it could be endured.

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"We be commanded also, if ye do not walk, ye shall be dragged." It was almost an apology.

Belar, the senior Guard, had paused on a step farther up. "Be you waiting till the gods have died?"

Isak took another step. His other knee was almost as bad. "They will not die," he said. "They will let a darkness happen, but then they will come again with their light. It is only that they must give us a sign. They are not cruel." But he resumed his climb.

"Serve them; no others," he said through his pain, and saw the look of guilt on Belar's face as he turned also to resume his upward way.

It was only a little way more; another turn of the upward spiral, one more level to the topmost landing. Belar paused there long enough to glance back. Satisfied that Isak still followed, he strode off along the gallery. Isak paused too when he reached the top, got his breath back, and let some of the pain fade from his legs. Then, as the young Guard came up beside him, he went on.

To his left the gallery was open to the wind. It breathed cool on his back and his aching limbs. Above a parapet that was not quite waist-high, the broad, high-arched openings were separated only by narrow pillars. Isak could see a reach of the river, the tight-packed tenements and warehouses on the far shore's floodplain; the High Houses of the Preserve, white amid their green gardens, and the villas of the lesser houses clinging to the slope under the bluffs; the dark bulk of Citadel Lagash on its promontory and, faint blue shadows in the haze of distance, the mountains beyond. The young Guard was close behind, but even so the thought was in him that he could be over the parapet, falling and falling, before the Guard could interfere. That would be death, of course, and it would be a final thing. Pain still was preferable; that and the hope—though they owed him nothing, had assured him of nothing—the gods might give him back his life. Had he not served them?

Walking the length of that gallery, he turned his eyes from the temptation, watched instead the carved stone mural that was the inner wall. From it the gods glared outward, personified as radiant men; stern, lordly, all-powerful, and holding in their hands the fruits of river, sea, and forest; field and grove; wind, cloud, and sky. As he passed each one he raised a hand to his brow and gave them honor; for they were the source of all fortune and now he had need of them. If they noticed, they gave no sign.

By then he was only a hairsbreadth from being sure where he was being brought. At the gallery's end, were Actinic Gamow peered with small eyes over bleak, wind-scarred land where tiny men addressed their pleas toward Red Bethe's warm regard, two Guards with butted halberds stood at the arched entranceway into the hall beyond. In that chamber two more, similarly armed, held station before a portal whose high, wide, dark wood doors bore in silver and gold the symbols of the six gods and the Pale One, great hammered hinges of black iron and, embedded into the panels, geometric designs of emerald, ruby, and sapphire.

At a gesture from Belar, the first pair of Guards passed them through with a

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nod. In front of the second pair they stopped.

"We bring the prophet—he who claims the gods will send darkness," Belar said, speaking as if the words were filth on his tongue. "By command of the Brothers."

"Stand," replied the nearer of the pair, "and wait their pleasure."

"My name is Isak," Isak said. "I have no other."

"Wait their pleasure, clutterwit," the Guard repeated. The hand that gripped his halberd moved just enough to be noticed. The other Guard turned to the door, tapped its metal. It opened a crack. He made a series of odd finger signs. The door thudded shut again. Still unspeaking, the Guard turned from the door, resumed his station. Under his helm, his eyes watched like hard, small stones.

"I never said I was a prophet," Isak said. "It is only a foretelling."

Belar drew his sword. Its tip pricked Isak's navel. "Silence, speaker of lies."

It did not frighten. Death could be slow or quick; for all of hope, there were no other choices. "Is it my voice you fear?" Isak asked. "Or what I say?"

For the space of a breath, two breaths, their eyes met. A crafty smile worked the side of Belar's mouth as he looked away. "We be commanded to deliver ye whole." He sheathed his blade. "Hazard not the gods' wrath."

"And you?" Isak asked.

Belar's only reply was a hateful grimace. His sword stayed in its scabbard. So it would be the slower death, unless the gods turned kind. Nor did that seem likely; ultimately, it was the gods who had brought him to this place.

Whatever more might have been said was struck from their tongues as the door boomed full open. The priest stood there—the same priest, the one who had come to his dungeon. Now, in this better light, Isak knew him: Balchin, Legate Priest to the Council of Brothers. He should have known it could be no other. Those brows, that stance, were unmistakable. The thick-lidded eyes flicked from one Guard to the other, then settled on Isak. Isak stood unflinching, met those eyes with a firm, steady gaze of his own, for all that his body felt a chill like mountain water pouring over stone. Peripherally he noticed the Guards take stance as the confrontation stretched out. Abruptly, Balchin's hand chopped air, then jerked a thumb into the doorway behind him. Turning, he led the way inside, as if there was no doubt he would be followed.

Nor could Isak refuse. Belar's hand at the small of his back thrust him forward, stumbling, and when he got his feet under him the hand was there to propel him once more. He was allowed no time to protest or resist or even catch his breath; and the third time an expertly placed foot hooked his ankles and sent him sprawling on the hard stones. He was down before he knew what had happened.

"Stand, wretch."

For a moment he did not know where he was. Then it came back. He got up slowly. One of his knees was bleeding again, and all his other hurts had been wakened. He was deeply aware of his nakedness and the filth that covered him, and that in that condition he was in the presence of the Council of Brothers. The Guards were gone and the

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doors were shut—manned only by two stolid deaf-mute doorkeepers.

"Approach and be judged." It was the voice of the Legate Priest, who stood a step below the highest level of the dais where old Sedmon slouched in a high-backed chair carved from a giant stonemelon husk inlaid with polished jade, obsidian, and gold. On either side of him, in smaller chairs on wings of the dais not quite so high, sat the Brothers. Isak could feel their eyes inspecting his nakedness.

"I do not concede your right to judge me," he said. But he advanced; what would happen would happen. He hoped they would think him brave. Had he not served the gods? He wished he could know what fate they held for him.

The floor was tight-laid stone, polished to glistening smoothness. The walls were stone rising to a high, vaulted ceiling. Tall windows on three sides let in the gods' light. On the fourth, behind Sedmon, six sunbursts of silver and gold and electrum, each randomly placed and each a different size, spread rays as far as they could reach to either side, down to the floor, and upward to the ceiling's high arch; and, rayless, one perfect disk of pure white stone. Before that splendor, Sedmon and his Brothers in their silken vestments were ugly old men.

Isak advanced. Though wary of being tripped again, he kept his eyes not on the floor but level with the old man's, declaring without a word that though he might die he would not abandon truth nor dishonor the gods. When he was still several strides from the dais, Balchin moved a half-step toward him, one step down from his previous place, and raised a hand commanding him to halt.

Afterward, thinking about it, he saw he should have chosen his own place and moment to stop rather than let them control him. But he had been blown by the winds of authority and circumstance most of his life. The habit died hard. Obedient, he stopped.

For a moment there was stillness. Isak gave no glance to Balchin nor to the Brothers. It was Sedmon's hand that held his life. The moment lengthened, turned brittle, broke.

"Kneel, creature." Sedmon's voice was husky, dry; an oddly whispery voice. Isak hesitated.

"Creature!" Sedmon commanded, raising himself. One of the doorkeepers scuttled forward and struck the back of Isak's knees with a brass rod. Isak went down with a startled cry. The stones were hard and cold under his ruined knees. He steeled himself to endure.

Sedmon turned to his Legate. "What is this specimen?"

Balchin fingered his torque. "Eminence, he claims a prophecy."

"A foretelling." Isak found his voice. "A mere foretelling."

"I did not hear that," Sedmon said. Moreover, his tone declared, he would not. "Say more," he told Balchin, and let his hand rest on his globular belly.

"A doomsayer, Eminence," the Legate Priest said. "And typical of the lot. His claim is that, when next Actinic Gamow shall overtake the Pale One—which is imminent, I would add; not this passing, but perhaps the next or between that one and the one that follows, while they are under the world—"

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"No," Isak said. He glanced at how the gods' light fell through the windows onto the floor, how the pools of light were wedged with shadow. It was hard to measure their divergence by eyesight alone; there was not a great difference between one passing and the next, but Dalton was newly risen, and if what the Legate Priest had said was a guide . . . "It will not be until the one that follows. They will stand half up the sky when it happens—" That much he was sure of. "—and there will be no others in the sky when . . ."

He broke off. Sedmon's gaze seemed to go past him to the wall far behind him, an impression so strong Isak felt a need to turn and see what Sedmon saw. But he did not. A stillness grew as slowly as a spider vine.

"He does not hear you," Balchin said. Then he addressed himself to Sedmon again. "He has said that with the overtaking will come darkness, which is clearly preposterous, but . . ."

Some of the Brothers had begun to stir in their chairs. Sedmon's almost lipless mouth moved. "That we have known and judged. Proceed."

The Legate Priest stiffened. His mouth clamped shut, but his temper held. "He has said also—and this is his blasphemy, Eminence—that the darkness shall be a portent, though as you know there is no reason why it should be."

"None?" Isak asked. Even as he thought, the word came from his tongue.

"We do not hear you, wretch," Balchin said.

"Do you say you know the gods?—can say their thoughts? Their purposes? Their goals? When you cannot even say how they will share our sky?"

"We do not hear you," the Legate Priest repeated. His voice was edged with rage. He turned again to Sedmon. "Eminence, you have seen and heard. It remains only to settle what should be done with him." His glance shifted momentarily to include all the Brothers. "Be there dissent?"

He waited. None responded. "Eminence?" he asked.

Sedmon tipped his head, traced the line of his jaw with the tip of a finger that was little more than bone. "You would propose?"

One of the Brothers roused himself. "Make an example of him." White-haired, scrawny-necked, both his front teeth missing. "Can't let every little bit of scum say what he wants about our Temple—or our gods."

The Brothers stirred. "Aye! Split his tongue!"

"Cold knife!"

"Let him drink blood! His!"

"No! The hot knife! Ah, they do not die as quick!"

The Legate Priest waited them out. When the last had subsided he spoke again. "Eminence, he and his followers have spoken to much of the public. The city is full of his forebodings. The streets whisper his words . . ."

"Like gavials," one of the Brothers muttered. "Believing the first thing they hear."

"And anything else," growled another.

"So long as it soils the Temple." A third.

"Therefore his . . . ah, reward," Balchin went on, "should be equally before the public's eyes. Having listened to his lies, they should hear his

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screams. His tongue should be split its full length—I think we are agreed on that. Myself, I would urge the cold blade. It is true a slower death might be more satisfying, but in this creature we have not the usual charlatan. Rather, a most clever one, and with some part of a scribe's skills. Take speech from him but let him live, and he would put his heresies on parchment, carve them on stones. Let such stuff be put abroad and we, with all our powers, could not scratch it out. I say, let his tongue bleed. Let the flow of blood strangle him and be done."

"While those who fawned on his absurdities watch him writhe!" A fist like a melon cluster came down on a knee as fat and round as a sausage. "A spectacle for god and man!"

"Aye!" A gleeful finger jabbed at Isak. "For his offense, a bleeding tongue! The perfect cure!"

"Ha! Let him contemplate the honor of the gods while his blood bubbles!"

Once Isak had thought them the wisest men in the world. Now the need to tell them their stupidity was unbearable. Hardly knowing that he spoke, he told them that when the overtaking came, the truth of his foretelling would stand beyond argument—beyond even their power to deny. Would they dare, then, do harm to the one who foretold it? His words were drowned in the rattle of voices. Even he could barely hear. Was it possible he only thought he had spoken?

The Legate Priest waited until silence came again. "Eminence?" he inquired.

"May I not speak?" Isak asked. "If no one else will speak in my behalf . . ."

For a moment, Balchin looked blank. "Eminence, he asks to speak." He turned to Isak. "Be warned, wretch. You are friendless here, nor are the men you see disposed to credulously hear your heresies."

"Even so, I would ask to speak," Isak said.

Balchin looked to Sedmon. "Eminence?"

The old man's smile had nothing of kindness in it. A man who enjoyed to watch the torment of lesser creatures would smile like that. Isak felt ice touch his bones. The hollow-set eyes examined him. A claw-thin finger came up to nick the smile. "We shall be pleased to let it speak," the whispery voice said. "It shall have so little opportunity when we are done with it."

Balchin turned to Isak. "Speak at your hazard, wretch."

The pain in Isak's knees had grown until it was as if he knelt on mangled stubs. "May I stand?" he asked.

Old Sedmon's brow arched. What effrontery was this?

"Now he asks to stand," Balchin said with fastidious scorn.

"Next he will ask to live," said one of the Brothers. It brought a flutter of chuckles.

Sedmon waited through it. "Objections?" he asked.

"Only equals stand before us," a Brother said, his jowls aquiver. There was a mumble of assent. Heads nodded.

"Speak as you are," Sedmon said.

Well, he had endured for this long. "As you choose," Isak said. "I have not much to say. Only that I have tried at all times to speak truth. I was puzzled when you failed to consider my foretelling seriously, and when you sent the

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Guards to make me captive I could not believe it was happening. Ever since, I have tried to understand your thoughts. I find it very difficult.''

''Do you question us, wretch?''

''I have tried to understand,'' Isak said. It was a fine distinction. ''In that, I must admit I have failed.'' He swallowed. This wasn't what he had started to say. ''I have told you a time of darkness will come, and you have chosen to disbelieve. You have decided I will die, and I admit you have the power to make that happen. But my death will not change how the gods share our sky. When my foretelling is shown true, and your judgment of it has been shown not true, will that not prove who better understands the gods? Who serves them, and who does not? And would that not suggest . . . ?''

They let him say no more. ''Heresy,'' one blurted. ''His tongue condemns itself,'' growled another.

One voice cut through the babble. ''If!'' it roared.

In Isak fierce anger, stroked by the agony of his knees, blazed high. ''If I have spoken false, if the overtaking shall prove me false, I will consent to die,'' he said. ''But if . . .''

Sedmon's upraised hand commanded him to silence. He gave it no heed.

''. . . if it shall prove I spoke truth while you have spoken what is not true . . .''

The Legate Priest strode down from the dais, advanced, and with a sweep of his arm dealt Isak a clout to his head that flung him sprawling. Standing over him, both fists clenched with the need to strike again, face gorged with hot blood, the man thundered, ''Honor the gods, wretch, and they who serve them.'' His heel stomped Isak's ribs, driving breath from him. For a long time he lay there, knowing nothing but red pain and the chill stones.

When he came to himself, he was on his knees again, his burning knees. Two doorkeepers crouched beside him, propping him upright. Balchin had gone back to his place at Sedmon's elbow.

''Eminence,'' he was saying, ''his argument does suggest a refinement to our disposition of him.'' He touched the fire opal on his torque. ''What better than to slice his tongue while he sees his prophecy proved the lie it is?''

''And if it is not?'' Isak asked. For a moment he glimpsed a hope of living, after all.

Balchin's chuckle dashed it. ''He forgets, Eminence, in addition to making claims upon our gods, he has put slanders on those who serve them. Such brash behavior should not go without its proper reward.''

He had known there was no hope when they took him, but still he had dared to hope. Now that last shred withered. All the power of his reasoning, all his arguments, had been useless as a reed against the tide. He looked from one face to another—all those old, plump, small-eyed, grey men—and felt in those eyes the final judgment of the gods. He might as well have looked for mercy in the stones of the wall behind them. In the end, he came back to Sedmon and the Legate Priest.

''Eminence?'' Balchin asked in the silence.

''At the time of the lesser overtaking,'' Sedmon pronounced. ''An icy blade.''

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Beaming with delight, Balchin made a sign to the doorkeepers, who lifted Isak by his arms and turned him from that implacable tribunal. For a breath, Isak tried to resist, but he had no strength. Without their help he could not stand. "It is my single hope," he said. "That is when the darkness shall come." He hoped they would think him brave.

"He does not hear you, wretch," Balchin's voice boomed triumphantly to his back. "Nor do our gods!"

The doorkeepers took him away. He could not walk. Thrust into the hands of the Guards who had brought him, he could only lean against them. In the end, the young Guard carried him, cradled in his arms like a child. All the dream-like way down to his cell, one thought droned through his thoughts: when the darkness came, it would be like the closing of an eye. For the first time since there had been men, the gods would not watch. He wondered what it would mean. He wondered what could happen while they did not watch.

Ah, love, let us be true
To one another! for the world, which seems
To lie before us like a land of dreams,
So various, so beautiful, so new,
Hath really neither joy, nor love, nor light,
Nor certitude, nor peace, nor help for pain;
And we are here as on a darkling plain
Swept with confused alarms of struggle and flight,
Where ignorant armies clash by night.
—Matthew Arnold

* * *

Through the narrow, high window he watched the slow change of light and shadow on the clouds. From that he knew the passage of time. So he knew, when the Guards came again, that the moment had come. He got to his feet as they entered his cell. As wary as if he held a sword, they approached him. Suddenly one caught his arm and flung him down. Before he knew what was happening, a thong bound his wrists behind him and shackles joined together by a chain were being screwed tight around his ankles. While that was happening another Guard stood in the doorway, blocking it with his body and his drawn sword.

They ignored his protests and his questions. They crammed a rag into his mouth and secured it with another rag knotted behind his ear. They jerked him to his feet and noosed a rope of braided thongs around his neck. They pulled it tight until his breath was squeezed and he could feel the beat of his pulse against it. They led him forth, a Guard holding each end of the rope, one ahead and the other behind. The chain between his ankles was too short to allow a normal stride. To avoid stumbling he had to take short steps while the Guards with the rope walked at a normal pace. The Guard with the sword fell in beside him and encouraged him with the flat of his blade when he lagged.

The stairway, the same as before, took them upward. As they climbed, the dim light filtering down from above grew stronger. Walking was easier on the steps: the chain's length permitted him to go from one step to the next without hindrance, while the Guards

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had to limit their strides to what the steps allowed. Being taken toward death, he could still feel grateful that a smaller torment had stopped.

The Guard beside him, matching him step for step up the stairs, gave him a sideways glance and a peculiar smile. Abruptly, with no warning but the smile, he barked, "Choogh!" and, crouching, darted his sword between Isak's ankles. Hobbled and bound, dragged on by his leash, Isak could not avoid being tripped. The Guard ahead of him, warned by the shout, leaned against the increased weight on the rope. For a long moment—it seemed forever—Isak hung suspended while the Guards plodded stolidly upward, dragging him, while the rope cinched more tightly around his throat and he struggled to get his feet back under him. The Guard laughed a soundless laugh and, reaching out again, sliced the edge of his sword across Isak's belly. Blood welled from the cut.

They left the stairway at the second landing and emerged into a broad passageway. Narrow windows laid strips of light across their paths. All else was gloom. A squad of Guards fell in step around them. Ahead, in golden vestments, walked Balchin; no lesser priest would claim the privilege of seeing a Prophet quashed. Following that stately presence marched two acolytes in scarlet with a huge bronze gong suspended from a yoke between them. The passageway turned. They passed under an arch, mounted another short flight of steps, and emerged into the light of the gods on the steps in front of the Temple. The brightness stung Isak's eyes. One of the acolytes stroked the gong.

They started down the steps. Isak had never seen such a human mass as packed the square. They filled it. At the gong's sound, heads turned, looked up; thousands and thousands of eyes. They made him conscious of his nakedness. They had come to see him die. The stones were warm under his feet. His chain rattled and the air felt cold.

He looked skyward. In the west, orange brightness stained the sky where Red Bethe and Bright Dalton had lately gone down. Halfway up the eastern sky, the Pale One and Actinic Gamow stood together, so close they seemed almost to kiss. He tried to see if there was still a space between them, but Gamow's brightness stabbed his eyes no matter how tightly he narrowed them. He had to look away.

By then they had come down off the steps. The Guards advanced to open a way through the crowd. Far off through the throng, Isak could see the waiting scaffold with red and gold pennants fluttering from its corner posts. The Obelisk's shadow darkened its nearer flank. An incense pot vented green vapors into the air.

Something tickled his foot; he looked down. Blood from a gash on his shin—when had that happened?—dribbled down the side of his heel. From the slit across his abdomen blood also flowed; more than a hand's count of rivulets streamed down his thighs. He looked up again to Gamow and the Pale One. They seemed not to have moved at all, though he knew they must have. He wondered if they would save him and how they could do it if they did. He wondered if anything could save him.

Acolytes, arms linked and chanting

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in Old Tongue, held open the way the Guards had cleared. As the wedge advanced, more acolytes materialized from the crowd to hold the lines and more had joined the escort around him, creating with clapperboards, ratchets, and thunderdrums a compulsive, rhythmic roar. The rope dragged Isak on. The chain made him take short steps. His feet stubbed the uneven stones. Shouts from the crowd made mock of him.

"Better times!"

"Darkness for the Prophet!"

"Wag your tongue two ways, lad!"

Isak wanted to answer them, wanted to shout that he had spoken truth, that the darkness was almost upon them, that the gods must be served. But the gag sealed his mouth and his wrists were tied behind him so he could not point skyward, could not make them see how close now the two stood to each other. He caught an acolyte's wandering gaze, made the man look at him, meet his eyes. He felt a tiny triumph when he saw the man falter in his chant and, embarrassed, look away.

A melon husk struck his shoulder, breaking the spell. Something squishy glanced off his knee. Other objects, most of them wet and soft, landed on the stones around him. The Guard beside him stopped, helm knocked askew; he raised his sword high, shouted a command. The bombardment faltered. A yellow-green something splattered Isak's side. A bit of it stained the Guard's cheek; he yelled a curse. Some of the other Guards were trying to dodge, not always with success. They drew their swords and menaced the crowd. The barrage ceased. The procession moved on.

"Feed him to the eels!" the crowd jeered. "Honor to the gods!" The acolyte struck the gong, and struck again.

A steep stairway, lightly built, came down from the platform. It sagged and quivered under Balchin's weight, forced him to lean well forward and grip the rails to keep his balance. The acolytes with the gong did not try, but turned aside. Isak, when his turn came, realized he would need his hands, but they were still tied behind him. No one came to loose them. He stopped. The Guard ahead of him, already climbing with the rope lugged over his shoulder, paused midway up and looked back. A dark growl shaped his face. With a motion of his shoulders, Isak pantomimed helplessness.

For a moment, then, the impasse held its shape. Isak stole a look upward; Gamow and the Pale One stood virtually together, close beside the Obelisk's dark towering column. No different from before. If they would save him, now was the moment.

Nothing happened. The Guard who had followed with the other end of the rope moved past and started up the steps. The Guard who had walked beside him nudged him to the foot of the steps and, sheathing his sword, boosted him onto the first step. Following close behind then, his shoulder rammed into Isak's back, he supported Isak against losing balance and forced him from behind to climb while the Guards with the rope pulled on him from above. It was as if the gods had pondered and settled his fate; he should have remembered he was not the first trussed man to go up those steps, that the Guards would know how to make him climb.

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The steps creaked and trembled under the weight. Isak felt the wind. The rope was tight around his throat, and it was hard to breathe. His sense of balance thinned and died and all he knew was the squeeze of his throat and the thrusting, rough force against his back. He reached the platform in a half-blind daze. He staggered and would have fallen, but they caught his shoulder, steadied him. Mercifully, they loosened the rope. After a while his sense of balance came back and he could see again.

Here above the heads of the crowd, the wind breathed cold on his nakedness. It ruffled the Legate Priest's robe and fluttered the pennants on the corner posts. The wicker of which the platform was woven creaked and gave under the leather that covered it. A troop of musics on the stones below flared their brasses. The Guards marched Isak forward to stand before Balchin.

The Legate Priest's head was freshly shaved; not even eyebrows sprouted from that sleek skin. Gamow's brightness glinted on his glossy pate, struck sparks from his torque's jewels. "Wretch, kneel," he said. Before Isak could move, a sword's flat to the back of his legs set him down whether he willed it or not. He had forgotten the condition of his knees, still barely started to heal. It was like kneeling on a fire. The crowd cheered as, sick, he swayed.

Pointing the head of his staff at Isak, Balchin spoke; first in Old Tongue, declaring he spoke with the approval of the gods. Then he shifted to ordinary speech.

"You have declared prophecies that are not true," he said. The staff's crest trembled less than a hand's breadth from Isak's eyes. "See for yourself. Actinic Gamow burns as ever, bright against the firmament. As ever, we receive the bounty of our gods. As ever, they lay their shadows across our land. How say you now, false prophet?"

The question expected no answer. Against the wad in his mouth, Isak could not even clench his teeth. Nor could he see Actinic Gamow, who shone warm on his shoulder blades and sprawled his shadow at Balchin's feet. Neither could he see the Pale One, though the two had to be close, and narrowing the gap between them every moment. The Obelisk's shadow lay beside his own, but to his eyes its sidewise movement was too slow to measure. The platform had no marker tiles, but surely it could not be much longer. Desperately he hoped it would not be much longer.

Balchin's staff struck him a sweeping blow. He fell on his side. "Enough of insolence," the Legate Priest boomed. "False prophet, kneel." The staff's crest raked Isak's brow.

Urged and, to a degree, helped by the Guards who held the rope, Isak struggled again to his knees. Without the use of his arms it was very hard. His vision was blurred and he could not hold himself steady. His eyes turned skyward and brought the discovery that now he faced the Obelisk. Its shadow lay across him, blocking Gamow and most of the Pale One from his view. He could feel blood running down the side of his face.

He wanted to see Gamow, could not endure not knowing how the god and the Pale One (was she also a god?) were standing. By leaning to his left, so far

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he almost fell again, he achieved a glimpse, and for a chilled instant he thought his foretelling had been wrong, after all. The Pale One's cool white edge came into view beside the Obelisk before Gamow, which meant the overtaking had begun; yet there was no darkness. Then, narrowing his eyes, he saw how Gamow stood: above the Pale One's trailing edge but well below her northernmost extreme. As the overtaking progressed the god would pass behind her, just as he had always known. Then the Guards were taking hold of his shoulders, forcing him to turn, hobbling on his knees, to face the Legate Priest again.

Again Balchin pointed with his staff. "Hear now a prophecy that is true, false prophet!" His voice roared; he spoke not for Isak's ears but for the crowd's. "Your tongue, which has articulated lies, shall henceforth be in two parts. Your blood shall bubble in your gullet. You shall die in the sight of the god whom you said would forsake us."

He gestured with his staff. The Guards jerked the rope. Isak fell on his back. They dragged him carelessly across the platform to where waited the tongue-cutter's frame. They lifted him onto it, thrust his shoulders back against the crosspiece that would hold him half erect while the work was done, and trussed him into it by the rope at his neck, then by thongs at his waist and—bending his knees double and apart—his ankles. The hobble-chain they cast aside. They fitted a basketwork cowl about his head and laced it iron-tight across his temples, taking from him even the small freedom of being able to turn his head.

He was in the Obelisk's shadow and faced away from it. Even by rolling his eyes he could not see Gamow or the Pale One. Balchin advanced, a shiny black blade in his grip. "Now you shall taste truth, false prophet!" The Guard with the sword leaned over him and, with his sword, sawed through the cloth that held the gag in his mouth. He would have spat it out, but saw the shadow of another Guard coming up behind him with an object in one hand that could only be the tongs to catch hold of his tongue. He bit down on the rag as hard as he could.

The one with the sword set its point to his throat. The other waited, tongs poised. It was hard to watch both of them at once and also the Legate Priest; and there was at least one other Guard somewhere that he couldn't see. He tried to read the shadows. Surely if he could delay a little longer the darkness would come. The sword's tip probed his throat.

"No! Touch him not!"

It was a different voice, a woman's, from somewhere below. Other voices came then; men's; many of them. "Hear her! Through her speak the gods!"

Isak couldn't turn his head to see, but Balchin was looking that way, his brow drawn in a puzzled scowl. The sword eased its pressure.

The voice came again, urgent. "I must speak, must tell you . . ." It sounded nearer. And the other voices: "Hear the gods speak!"

With a woman's voice? How could that be?

The platform shuddered with the tread of new feet on the steps. The Guards were looking to the Legate

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Priest. Balchin watched, his scowl turning more and more to rage. Isak took advantage of the distraction to spit the wad from his mouth; the Guard with the tongs saw, but wasn't quick enough to catch his tongue. Snarling, the Guard struck him a blow on the side of his head, hard enough that flares of yellow light blazed before his eyes, and for a moment whose duration he never knew he was aware of nothing but that shock.

When it passed, the Guard had got his mouth open. The iron tongs intruded roughly against his teeth, seeking. He tried to clench his jaws again, but something had been wedged between his teeth to block that. The tongs found his tongue. He couldn't draw it back far enough, couldn't evade the searching, snapping bite that tasted of metal and pain, pain that made his eyes water, pain that. . . .

"Don't!" The woman's voice, anxious, very close now. "Let him go! Please! You must hear me. I carry the gods' child. . . ."

Kalynn? In spite of his bonds, the stabbing pain in his tongue, Isak tried to twist around. He wanted to see, to know, to be sure. It was not possible.

"He speaks to me. I hear him," she cried. "He commands I must tell you the Prophet speaks truth. There shall be darkness. That the Temple and all who are in it . . ."

She came into view. Two Guards followed, a half-step behind her, short swords naked in their hands. The wrap she wore left her right arm and shoulder bare. On her wrist, gold and crusted with jewels, was the cuff of a bride of the gods. She held it high. Its jewels flashed in Gamow's light. That she carried a child none could doubt. No garment, no matter how artful or loose-fitting, could have concealed the swelling of a baby close to term. Her awkward stride was the gait of a woman soon to give birth.

". . . do them dishonor by the way they serve in the gods' name. That . . ."

"You are deluded, woman!" Balchin roared. He gestured, but it was the hand that held the blade, not his staff. Isak heard the crowd gasp. "Our gods are mysterious. They speak to no one; even their signs are not understood, except by the most gifted. As for your . . ." he feigned a laugh ". . . your condition, you would not be the first silly girl to have suffered an accident at the baths. So long as the gods hold our sky there shall be no darkness. Our gods shall not abandon us. Now stand aside, that I may ensure this charlatan shall speak no further slander on our gods and those who serve our gods."

"No." She did not move. "The gods' child tells me the darkness shall come, tells me . . ."

Impatiently, Balchin moved to fend her aside. One of her escort advanced to block his way with a sword. "What . . . ?" A silent, startled moment. Then: "Guards! To me!"

Swords out and poised, the Guards on either side of Isak moved to the command. Kalynn's other escort turned to meet them. His sword was already out. Its point stood poised against whichever one came first. Under the brow of his helm, Isak saw Hobur's pale blue eyes, his grim and thin-drawn smile. The Guard who had dropped the tongs began to circle wide. Hobur backed a step closer to Kalynn. Slowly the Guards

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advanced, blades searching warily for their chance.

None of them had eyes for anything but the shifting, darting points of the blades, so it was Isak who noticed first the change in the sky. Most of it was the same white-tinted blue it had always been, as full of light as a lamp's globe. But there to the west, though still blue, it had become a darker blue, such as he had glimpsed once through clouds while crossing a high mountain pass. As he watched, the darkness deepened.

He watched it grow until he was sure, and when he was sure he shouted it with all the force his body could summon. "The darkness!" His voice was a croak. "The darkness! It comes!"

For a moment, the tableau before him did not change. Each stood frozen, intent on those who menaced him. The light was very strange now, as if Gamow shone through tinted glass, all shadows sharp, but his brightness muted. Perhaps Balchin sensed that, for he looked skyward, suddenly aghast. At that instant the darkness came.

Cries of fright and dismay broke from the crowd below.

Eastward, the sky was still blue, and light still came from it, but rapidly the light was fading. In the west, the firmament was black, black as obsidian or death, but for a few faint scattered sparks—sparks too faint, too tiny to be gods; but what else could they be? Gods never known before? Was that possible?

Balchin uttered a hoarse, anguished cry. The blade fell from his hand. Slowly, as if he did not know what he did, he raised his staff, held it up first with one hand, then with both, its head offered toward the place in the sky where Gamow had been—and still was, behind the Pale One.

"Return!" he cried. "Forgive!"

The Guards who faced Hobur began to retreat. Hobur, wary for a trap, advanced cautiously.

Now Kalynn slipped a hand inside her garment, brought it out again with the slim, curved length of the tokku sword like a whip extending from her fist. Continuing the motion with which she produced it, she whisked it through the air before the Legate Priest. His staff fell to the platform; with it, still clutching its haft, went his hands. In disbelief Balchin stared at the stumps, the blood that jetted out of them. A terrible sob of despair burst from his throat. Slowly he went to his knees, bending forward as he sank. Again her blade whicked air. His head struck the platform, rolled, bumped to a stop. Headless, shorn of hands, contorted by spasms, his body slowly folded down on the platform. It lay, still jerking, in the smear of its own blood.

By then Hobur and Kalynn's other escort were driving the two Guards—what had happened to the third?—back and back toward the platform's edge. Though well helmed and armored and equipped, they had no will to fight. Not now, abandoned by the gods. Hobur made a sudden feint; his target dodged, tried to set foot on empty air, yelped, and fell. His companion shot a glance, looked back too late, as a sword tip touched his cuirass, forced him back, off balance, and abruptly gone.

Kalynn's blade, sticky with blood, sliced Isak's bonds. "They hurt you!" she cried. Wild. As if she felt the

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wounds herself. "They hurt you! They hurt you!"

"What is happening?" Isak asked. He really didn't know. She was cutting the rope at his neck; he was conscious of the long, deadly blade close to his ear.

"The gods sent their darkness," Kalynn said. He felt the rope come free. It was still knotted around his neck, but no longer bound to the lattice. She knelt and sawed the thongs that closed the basketwork around his head. "Are you all right?"

"I don't mean that," Isak said. "I mean . . ." It was too much.

"You are the Prophet," Kalynn said. Her face was close to his as she worked, but she watched her hands. "You said the darkness would come, and it did. The priests said it wouldn't, and they are discredited. Now the Temple . . . Oh, you're bleeding! Don't you feel it?"

He could feel a thousand aches and a need to know more things than his tongue could touch. "How did you . . . ?"

"Don't talk," she said. "It's . . . The Temple is . . ." She pulled the basketwork off his head, tossed it aside, and started on the thongs at his waist. Her wrap was splattered with blood and the cloth was slashed where she'd drawn the sword, exposing one breast. Still bewildered, he looked again at the sky. Though it was dark, it still gave light, enough that he could see—not well, but neither was it the darkness he had known beneath the house of Palovar. Tiny, bright bits of . . . of crystal? of gods' light? . . . spattered the firmament like seeds in a fresh-sown field. And a strange, wan light came from behind the Obelisk, where Gamow and the Pale One stood. Was it possible that Gamow shone through the Pale One after all? It was very strange.

The thongs at his waist went slack. Kalynn moved to his ankles. "The streetwardens said they would cut your tongue. My father and his friends already were planning, if the darkness happened—I don't think they really believed—they were planning to seize the Temple, kill the priests and all the Guards. And, when they said they would cut your tongue, I . . . I didn't want it to happen. And Duke Lagash—"

"Is that who he is?" Isak asked. He could move one foot now. She went to work on the other.

"Didn't you know? He said it would be better than he hoped, and he would put his men in the crowd, and if the darkness came . . . And it did come, Isak. It did come."

"But it is not such a darkness as I had thought," Isak said. "We can see. I am trying to understand."

"The Pale One is giving light," she said. "There!" Suddenly his other leg was free. He tried to rise, but with his hands still tied behind he couldn't get his feet under him. She bent over him, lifting his shoulders, and for a moment as her face was close to his he saw her features suddenly tighten, as if with pain. "Are you hurt?" he asked; he couldn't remember seeing either Balchin or the Guards land a blow on her. He frowned, trying to recall those moments such a short time ago, but already in the confusion they were gone.

She didn't answer. She made sure he was steady on his feet, then moved be-

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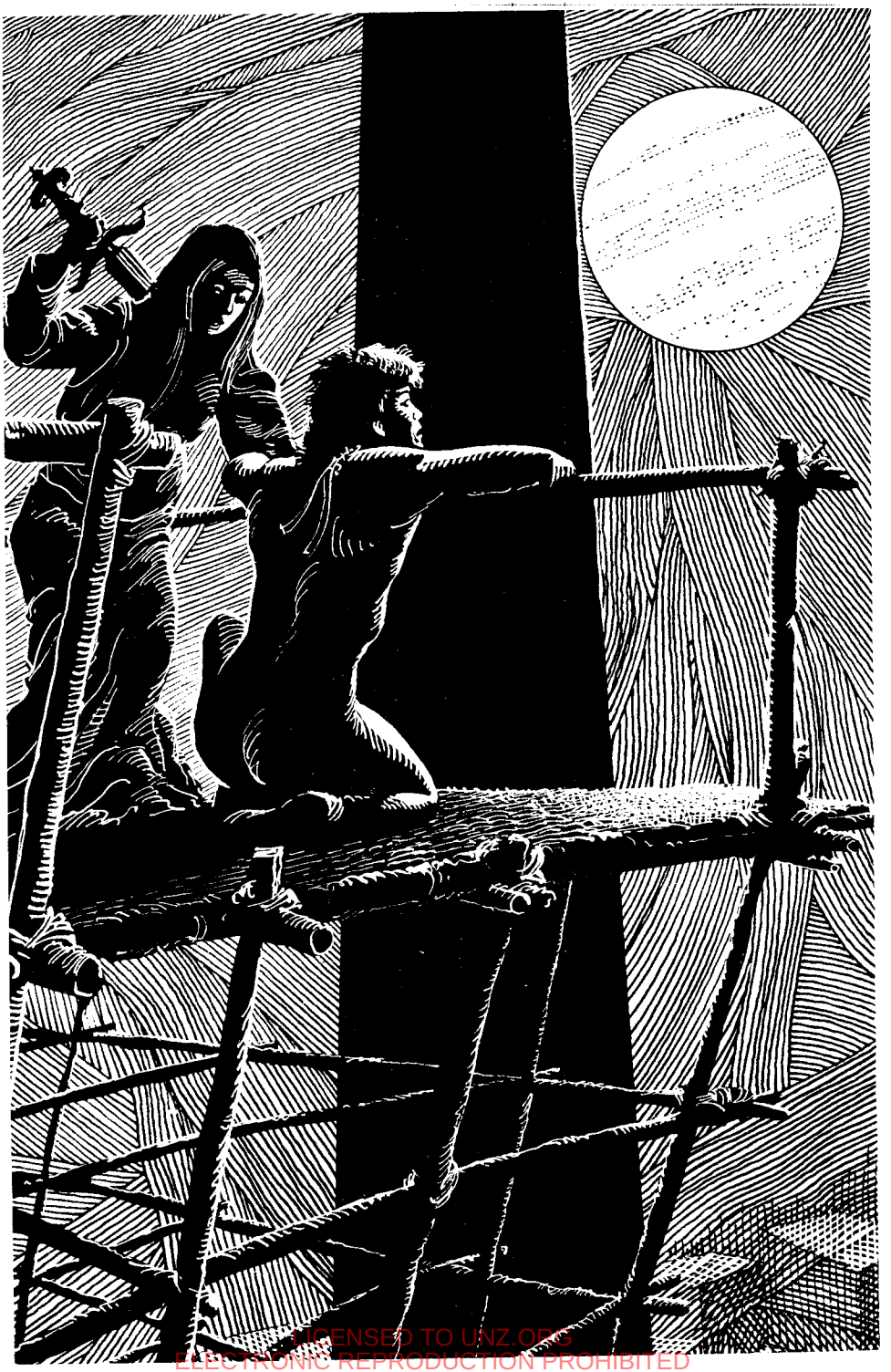

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hind him. He could feel her working at the thongs around his wrists. The tip of her blade touched his thigh.

He could look around him now. It was a colorless light that came from the sky, strong enough to cast shadows but not so strong that he could see things clearly. He could see shapes—the Temple with its towers, the Obelisk that was said to be the Center of the world, the three—three?—in Guards' clothes who now stood at the head of the platform's steps. Had he not known already what they were, his eyes could not have told him.

He tried to edge out of the Obelisk's shadow. He had to see for himself if it was true that now it was the Pale One who gave light. It was hard to believe. She had never given light before. Kalynn tugged his arm. "Hold still. I don't want to hurt you."

"Nothing you do will hurt me," Isak said. He wasn't sure what he meant, saying that—knew only that he spoke a truth. But he held still while she worked on his bonds, and watched the fighting below them in the square.

Fighting? Momentarily he thought it was simple disorder. Then he saw the pattern of it. Many, trying to escape from the square, formed a jostling crush where the Great Way entered. A smaller mob pushed against a cordon of Guards who blocked the West Road where it led off past the Brothers' residency. Out in the broad expanse of the square, sprawled shapes like cast-off rags lay—wounded? dead?—on the stones, while more than a few figures, acolytes and helmless Guards among them, knelt or stood motionless, some looking skyward at the marvels there revealed while others, more practical, warily watched those who fought.

There must have been hundreds doing battle, sending up a din that was combined of battle shouts and cries of pain, of metal clashing metal and the duller sounds of blades on wood and leather, cloth, and human flesh. Close-formed in squares and circles, Guards fought a rabble armed with blades of every type from long swords to butchers' knives, indifferently armored in mail and studded leather and rust-scarred plate, helmed with almost anything from a cooking pot with holes punched for the eyes to a turban with a flower stuck between its bands. Others, less well equipped, stood behind their kin holding torches high and tossing, now and again, straw balls and knotted rags soaked in oil and set aflame. Against blades the Guards' skill served them well, but they could not stand against the pelting gobs of fire. They ducked and dodged and backed from the thrust of a long-handled torch at the eyes; and, as they tried to avoid the touch of fire, blades found them. One by one they fell.

"Better times!" a man yelled, swinging his blade. Others echoed him. "Better times!" Isak wondered if times would truly be better for those who died.

The thongs that bound his wrists came loose. He turned to her, unwinding the leather strips as he spoke. "I am still your prisoner." He had meant to say that he owed her his life, but it didn't come out that way.

She looked up, straight into his eyes. "We couldn't let them hurt you. You're our Prophet." He saw again that sudden pinch of pain touch her face.

"Are you all right?" he asked again.

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There was blood all over her; he thought it was the Legate Priest's, all of it; he hoped it was.

She forced a smile. "You wanted to see the Pale One. Now go and see." She touched his shoulder, urging him to turn again.

He was torn. He didn't want to turn from her, but also he wanted to see the source of this strange light. With her urging, he turned and stepped out of the Obelisk's shadow, and beheld wonder.

It was as she had said: the Pale One shone—shone with a bright, cold light that was different from any light Isak had ever seen before. There was a whiteness to it unlike the metallic blaze of the gods. It neither burned nor hurt the eyes. Shining out of a black sky, the Pale One gave a light uniquely her own.

At last he turned to Kalynn again. "I do not understand. She has never given light before."

"Does it matter?" she asked. "Does it make a difference?"

He spread his hands. "I do not know. And those . . ." He gestured to the sprawl of tiny lights across the sky. "Are they all gods? There must be millions!"

"Could they be something else?" Kalynn asked. "Have they always been there, and we did not see them because the gods are so bright? Or did they only come now? What do the gods do that makes them gods?"

"I am wondering the same things," Isak said. "There is so much I do not know."

"Might begin with wondering if we'll keep our lives," growled a voice at his shoulder. He knew the voice. From under a Guard's helm, Palovar's dark brows scowled. "So far we've had the advantage of them, but . . ." His nod directed Isak's glance across the square to where the Great Way entered. The Pale One's light gave silvery touches to the helms of Guards streaming toward the square. "Thousands of them in the city. If all of them come . . ."

"They'd lose the city if they do," Kalynn said. "They wouldn't dare."

"They'd let us take it before they'd allow their Temple to fall. Here's where our strength is. If they defeat us here, they can take back the city whenever they want."

"But they won't," Kalynn said. "The gods favor us. See?"

They looked where she pointed. There, on the Great Way, the first of the fleeing mob had almost reached the leading Guards. As they watched, the Guards halted, took battle stance; some knelt, pikes nocked against the cobbles and slanted forward while between them, feet set wide, their fellows stood with hefted swords. The first of the crowd, faced by that threat, tried to stop, but the press of those behind forced them on. Pikes spitted them. Blades rose and hacked them down. But then, protected now by a buffer of dead and dying, the mob pressed on, breached the Guards' line, and trampled them into the stones along with their own fallen. The Guards who had been behind the line backed off, formed a new battle line, and stood ready. By then some of the mob had collected pikes and swords, and others had discovered that cobbles could be prized from the pavement underfoot and, with effort, thrown. And, appearing at the avenue's far end, the leading few of another mob—more coming into

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sight with each heartbeat. They carried swords and torches, pikes and billhooks and maces. One held aloft on the point of a sword a knobby object topped with something that looked like a priest's tricorn. It was too far and the light was too dim for Isak to be sure. At sight of the Guards the mob yelled and quickened its pace. The Guards turned to meet this new attack.

"Those will be all we see from the city," Kalynn said.

"Let us hope so," her father said.

Isak saw the look of pain come again to her face. He touched her shoulder. "Kalynn . . ."

"I'm all right," she said, too quickly. "I'm fine. I . . . it's just—" But then, as if with terrible effort, she clenched her teeth and fists and could say no more.

For a dumb moment Isak stared at her. Then he understood. He stepped to the edge of the platform.

"A midwife!" he shouted, loudly as he was able. "We need a midwife for a child of the gods!"

He scanned the scene below. There were fewer Guards than before. He saw one back away from the battle, throw down his sword, throw off his helm, and yield. "Honor to the gods!" Another joined him.

Isak searched for a sign that his call had been heard, but saw none. "A midwife for the child of the gods!" he called again.

She touched his arm. "You know it isn't," she said, but softly; only he could hear. "Please. I'll be all right."

"I know what you have told me," Isak said. "I would rather believe it was given by the gods, no matter how it was given. And . . ." He glanced out over the square. "Would a midwife come now for just an ordinary child?"

"But—" A twist of pain stopped her words.

"Do you say you want no help? You need none?"

Still in the grip of her pain, she gave no answer. He turned outward again and repeated his cry. "A midwife is needed! For the child of the gods!"

The woman who appeared as if from nowhere at the foot of the platform's steps was middle-aged, lank, and grey of hair. She paused with one foot on the lowermost step, looking up. "I be needed?"

Hobur, guarding the top of the steps, hefted his sword but glanced to Kalynn.

"Let her come," Palovar said.

The woman stumped up the steps with an awkward, arthritic gait. Hobur reached down to help her up the last few. She strode to Kalynn without a glance to anyone else and looked her up and down. "Child of the gods?"

"It was given in their name," Isak said. "We claim no more than that."

"Humph. Neither the first nor the last." Her glance swung to Isak. "You be the Prophet?"

"I have been called that," Isak admitted. "Both false and true. Will you help?"

The woman put a crooked finger's tip to a point above her left eyebrow. "If the gods' Prophet asks, it be an honor." She returned her attention to Kalynn. "You, child. Not enough sense not to let yourself get all excited. How old be you?"

"Almost eighteen 'takings, grandmother," Kalynn said. The woman

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watched her face even while putting out a hand to touch her swollen body.

"Your first, I presume." She didn't wait for Kalynn's answer. "Aye. Well, little enough to fear. A child of the gods, perhaps, but no different from any other for all that. And it now be coming soon enough. You be able to take the steps? Walk?"

"I think so," Kalynn said. "I could a little while ago. But—" Again the pain came. Her teeth clenched shut. Her eyes squeezed shut.

"You'll come then," the woman said. "No sense to make a public spectacle. Hard enough without all the men in the world looking over each other's shoulder." Her claw took Kalynn's arm, steered her toward the steps.

Palovar moved to interfere. "Hold. You can't . . ."

"My help be asked," the woman said.

"But where . . . ?"

The woman pointed toward the Temple's looming mass. "Where else, for a child of the gods?"

Isak took Kalynn's other arm, fearful that she might stumble. Palovar stayed them with a hand. "We do not know who holds it."

The midwife gave him a scornful eye. "Did you not see? When the darkness be on us, some of those that had torches killed the portal Guards and went inside. A great number of them. I saw the flicker of their lights through every window of the tower, all the way to the top. Look, they be still up there. And I saw the bodies come down from those windows. Did you not hear them yell as they came down? Have no fear. It be your friends that hold the Temple, not . . ." She nodded to the headless body at their feet.

Palovar grimaced, nodded, and strode to the top of the steps. "Ho! An escort we must have."

Down on the stones, a man looked up. "How many?"

There was less fighting now. Busy figures were stripping armor and weapons from fallen Guards, dispatching those who, still alive, resisted. Scattered randomly were still knots of conflict where swords hacked and blood still spurted on the stones, but the way to the temple was open. "Five . . . six," Palovar said uncertainly, then reconsidered. "Ten."

The man below moved off. "And find clothes for the Prophet," Palovar called after him.

Isak looked down at himself with true surprise. He had forgotten his nakedness, just as he had lost awareness of his wounds. Kalynn broke into laughter. "You didn't know?"

"I was thinking of other things," Isak said. Even as he spoke he realized how foolish it sounded; he didn't want to be foolish in her sight. He gestured to his injuries, the crusts of blood, his half-healed knees. "So much has happened."

"So much you made possible," she said. "So much you've caused to happen."

She'd done so much more than he. He'd been helpless through so much of it. "And you," he said. "You also. More than I."

"Could I have done anything less? Isak—don't you realize? Without you we'd still be wondering how we could win against the Temple. You're our

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Prophet. A true Prophet, Isak. Now—" She broke off, and again the pain was on her face.

He touched her arm. "Now," he said. "Come." The midwife took her other arm. They helped her toward the top of the steps.

"I can walk all right," she protested. "Really, I—"

Her foot struck Balchin's head and she would have fallen but for the hands that held her. She looked down. "That is the face I remember," she said. With a thrust of her foot she sent it rolling, two bumps and gone, off the platform's edge. Bending, she plucked the torque from its puddle of blood and hurled it away into the darkness. "And that!" Then she looked from Isak to the midwife and back again. "Now we can go," she said.

Except for one moment on the steps, when the pain came again, she was sure-footed enough. When it came she stopped and they waited until it passed; then they helped her the rest of the way down. "Is it supposed to hurt like that?" she asked.

Their escort was waiting with swords and high-held torches, a rabble with white kerchiefs at their throats and blood on their torn clothes. Some of it was their own. They cheered her, touched bloody sword to brow.

One of them passed Isak an acolyte's cloak which, if bloodstains were a sign, was no longer needed by the previous wearer, and a white kerchief which he realized only then must be a device to self-identify the rebel force. It too was stained. He put them on. Until that moment he had not known how cold he had been. The escort closed around him.

Surrounded thus, Kalynn, Isak, and the midwife set off across the stones. Ahead the Temple towered, but Isak felt more awe now at the treasure that walked beside him, close enough to touch, and the thought of a child about to be born. A fitting place indeed.

Softly, one of their escort dared begin a hymn, a solemn hymn of honor to the gods. At first only a chanted tune, a scattering of Old Tongue words, it quickly gathered strength. The others of the escort took it up, then Hobur, Palovar, the midwife, Kalynn; finally even Isak. As they neared the Temple's steps, the song came loud and brave and strong. Their torches blazed.

Whether you will or not
You are a King, Tristram, for you are one
Of the time-sifted few that leave the world,
When they are gone, not the same place it was.
Mark what you leave.
—Edwin Arlington Robinson

Duke Lagash came to him as he waited on the steps of the Temple. Except for the dead and those who scavenged from the dead, the square was empty; but the sky—the sky was a strewn field of brilliant, tiny gods, millions of them.

Definitely they were gods, Isak had decided, even though all of them together did not give as much light as Embrous Zwicky, for he had watched them. They were fixed to the firmament. They moved across the sky, as did the

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gods, at the pace of the turning world. What could they be, then, if not gods?

And, while Isak watched the gods, Palovar stumped up and down across the steps, impatient and restless and, like Isak, forced to wait. When they had come to the room where Kalynn would lie, when—careless of their vandalism—they had torn leather storm curtains from the windows and hangings from the walls to make a couch for her and had seen her comfortable, the midwife had ordered them out. Palovar had objected and Isak had been reluctant, but the midwife vowed to go herself if they did not. This was women's business.

Before such fierce authority they had no choice but to withdraw. Hobur, pressed into duty as keeper at the door, promised to bring news when there was news to bring; but unless there was trouble there would be no news until the child had come. Isak wanted to believe that nothing would go wrong, but he knew how possible it was. He sat on the steps, his shoulder against a prominence, and watched the gods.

"So, hatchling," said His Lordship. Behind him hovered a cluster of lieutenants, not so close as to seem to be with him, but close enough to answer his call quickly. Isak let a long pause pass before responding. The Pale One stood now near the highest point of her arc across the sky; he still did not understand how she had become a giver of light like the other gods. Was it possible she had always given that light, but it had not been noticed against the more powerful blaze of the other gods?

He brought his gaze down from the sky. Slowly, wincing at the pain it brought to his wounds, he got to his feet. "My lord," he said, meeting that man's eyes with steady calm.

"We have the Temple and the city," His Lordship said. "Three Guards captains have already declared for us, and two other troops have brought me the heads of theirs. The rest will come, one way or the other. Those who still live. In time we shall have the land, but that will take longer. Your role in that was not small. We are grateful."

Isak kept his reserve. "I am grateful for my life, my lord."

The Duke dismissed the matter with a gesture. "I would have you know it was not our plan that they should capture you. That was an accident of chance. The girl has been—shall we say?—rather hysterical over the question. I would hope you are more willing to believe."

"I wish that I could," Isak said, still giving nothing.

"Had it been our plan, you would not have survived."

He still might not, Isak thought. But he said nothing. When time had passed enough that the point was made, the Duke cast the matter aside with a chop of his hand. "Whatever, when they made known their plans for you, we saw the opportunity it gave. The rest you have seen."

Isak looked out over the square. Scavengers were stripping bodies and loading them into a wagon. The eels would get fat. The platform where he would have died looked very small at the foot of the Obelisk that was, so men had believed, the center of the world. They had been wrong about that also.

He nodded. "I have seen," he said.

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It no longer mattered. It was all in the past and, for the moment, he still lived. Now all he wished was to be left alone. He wanted to contemplate the Pale One, wanted to learn the secret of her transformation. He wanted Kalynn's child to be safely born.

But the Duke was not about to go away. "The Temple is empty. It cannot be left that way."

To Isak it was hardly a matter of concern. He said so.

"Left to itself, it would fill itself," His Lordship said. "That must not be permitted. In the end, it would mean a return to the condition we have only now corrected."

True enough, Isak supposed, but still it didn't involve him. He wanted to learn about the Pale One, the firmament, and all those tiny gods. He wanted Kalynn's child to be born without harm to itself or to her. Only those things were important.

"You shall hold the Temple," said the Duke.

Isak's thought had not been on what the Duke was saying. He wasn't sure, at first, what he had heard. He looked at the Duke. His Lordship repeated the words.

"But I am not a priest," Isak protested. "I am only a scribe, and not even properly schooled. I do not even know what the gods truly are."

"Nevertheless," said His Lordship, "you know them more than any other man."

Palovar had paused a few strides away. Now he approached. "You will accept," he told Isak. "You are the Prophet, and therefore hold the strongest claim. You—"

"No," Isak said. The prospect frightened him. "I am not a prophet. Nor have I ever been. I do not know how many times I have told you that. It was only a foretelling. But no one believes. Only Kalynn—"

"Hatchling, what is true is not important," said the Duke. "What matters is what people believe. To them you are the Prophet. What you believe about yourself changes nothing."

"But—"

Palovar stopped him with a curt gesture. "You are the Prophet, and because of that you hold power." He gave a nod to the Duke. "He would have you where you can be seen. Watched. The Temple's tower would be such a place. The other choice would be for you not to be seen again, ever, by any man."

"I think I would prefer that," Isak said. "I never wanted—"

"I think you would not," Palovar said. "We could not risk that later you might reappear. Too many men will think you might be useful to them. No. We would have to take measures that ensure you would never return. We would prefer to reward you."

So that was it: he could accept the Temple and all the privilege and honor that came with it, earned or not, or he could feed the eels. It wasn't much of a choice.

"Would I be permitted to continue my research?" Isak asked.

"You could devote the Temple's whole resources to it," said His Lordship. "Better in that direction than some others. Understand, you would not be our tool. Within the Temple you would speak with your own voice. We would not dictate word or deed to you. But

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know this also, hatchling: you shall know how you came to that place, and that, if we should deem it necessary, we could remove you. Yes, and the tongue from your mouth. Do not challenge our power, and we will not challenge yours."

As the Duke spoke, Hobur appeared in the portal. He stopped on the uppermost step and beckoned. Palovar glanced a question to the Duke; the Duke nodded dismissal. Palovar mounted the steps. He stood, head bent intently, to hear Hobur's news. Isak ached to know what he heard.

"Do you understand, hatchling?"

Isak met his eyes. He could not hope to oppose this man; it would accomplish nothing and lose him much. Nor did he know if there would be any reason to oppose him. "I shall want to serve the gods," he said, unsure what that might entail.

"So shall we all," His Lordship said. "Do you accept?"

Once, to achieve such station would have been more than he had ever dared to hope. Now, with it thrust into startled, unready hands, it seemed far less the incomparable prize; rather, it was like a garden of pebbles and bare ground. Yet what choice did he have?

"I would require some conditions of you," he said.

At once the Duke turned careful. "Name them."

"You shall give honor to the gods, and serve them," Isak said. "Serve them before yourself."

It was hardly the sort of thing a new master of the world could refuse, however reluctant. Duke Lagash looked grim but spoke no objection. "And?"

"You shall cause no man pain only because he serves the gods differently, so long as he serves the gods."

"We might have arguments on that," His Lordship warned.

"Then we would argue," Isak said, with a firmness he had not expected of himself. "Do not be sure men would do your bidding if I bade them not."

His own words startled him. Was it, he wondered, possible? Until he spoke he had not imagined such a thing. Could the gods, unseen, unfelt, have spoken with his tongue? How could he know? Dared he believe it?

"Credit me, hatchling, with more wisdom than the ones we have deposed," the Duke said. "What other bargains do you want?"

"One other thing, my lord," Isak said. He held himself steady, took tight control of his tongue, his tone, the shape of his words. "My name is Isak. I would have men know me by that name. No other. But you, my lord—" He did not turn from those dark eyes. "—you shall call me Eminence."

The Duke flinched as if slapped. He blinked. Then he threw back his head and laughed. "Well struck!" A hearty bellow. "Well struck!"

He made a fist. His teeth gleamed with pleasure. Nevertheless, he sobered almost at once, so rapidly that Isak wondered if it had been feigned. "You learn quickly . . . Eminence."

"I have been told that," Isak said evenly, not sure he had made a wise bargain, but not knowing either how he could have made it better.

"It is settled, then?"

Isak's glance had gone again to where Hobur and Palovar conferred. Not even a murmur of their voices came to him.

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"There is still much to settle between us," Isak said. "We must decide how much is yours and what still remains to the gods. But I would leave that for another time. For now, I . . ."

Impulse touched him. "There is one more thing I must ask."

The Duke was caught by surprise. "Oh?"

"A small thing, my lord. You know it is the custom that a scribe shall have a fee for service he has done."

"So?"

"So I must ask my wage, my lord." He wondered where such boldness had come from. He had not been born with it. "Have I not done service for you?"

"Indeed you have," the Duke admitted; indulgent, amused, wary. "Provided the opportunity to restore my House to its rightful status, which is not to say that it came to me without cost. But I am giving you the Temple and its treasures and all the privilege it commands. Do you expect a fee, additional to that?"

Isak demurred. "I did not know the Temple was yours to give, my lord. I thought it was the gods', who are greater than you or I. They might yet turn me out of it as they have turned out those who held it before."

"Hah!" The Duke spoke with scorn, suddenly humorless. "*I* turned them out. *My* men stormed it—hacked the Guards to bleeding meat and cast the Brothers from their tower like slops from a tenement. The gods did nothing."

"They gave this darkness, my lord," Isak said. "And caused the Pale One—if she is not herself a god—to give such light as we have, which she has never done before, to give assurance that their displeasure with men is not absolute. Without those, could you justify what you have done? Could you persuade that, acting against those who held the Temple, you did not also act against the gods?"

"Had you not brought this opportunity, I would have found another," snapped the Duke.

Isak nodded. Perhaps he would have. "Nevertheless, I ask a fee. Scribe's wage for service done."

Nettled now, careful, the Duke cocked his head. He scowled. "Name it, scribe," he said at last. "But know if I judge it excessive you will not have it."

"I would be grateful, my lord," Isak said, and touched his brow, "if, for my service, such as it was, you would pay one farthing. But I must have it now."

Though the heart be still as loving,
And the moon be still as bright.
—George Gordon, Lord Byron

The tower's steps were smooth as glaze, cold underfoot, and though the Pale One's light shone through the windows much of the stairwell was in deep gloom. Isak had to feel his way. He should have asked for a torch, but eagerness had burned such thoughts from his mind. The little slug of base metal, rough on one side where the mint's bondsman had stamped it, was a satisfying kernel of hardness between his fingers. Something real in an uncertain world. Somewhere above a torch flickered.

It had taken some persuasion to convince the Duke he was not being made

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the butt of some lugubrious jest. It had taken longer still to secure the coin; the Duke's own purse yielded nothing smaller than a dinar, and few of his lieutenants had brought money; not when there was likelihood of battle. Death they might have risked, but not the risk of being robbed while they lay dying. In the end, a common citizen was found who, with puzzlement, willingly exchanged a farthing for a gold piece, and wandered off bemused to tell his tale and start a legend.

By then Hobur and Kalynn's father had vanished. Isak entered the Temple—his Temple. It was a strange thought; it would be long before he could begin to think of it that way. No, never: it was the gods' Temple; he could be no more than their servant in it. He tried to think how he could serve them, and by what signs he could know what service he should give. He groped his way through the chancel's gloom, found the stairway, and began to climb.

At the door to Kalynn's chamber, guarding it, was a man whose face Isak did not know: grey beard, blue eyes, shaggy brows. He wore an ill-fitting buckler of age-cracked leather with verdegrised brass rings, a white scarf, and around his head a bandage that oozed wet blood. His slouch straightened as Isak came up the steps into the lamp's fitful light, but after a moment's measuring glance his hand let go of the hilt of his sword.

Still, when he reached the landing, Isak paused. "May I go in?" he asked.

The man's head turned slightly toward the door. Scars marked it where the silver and jeweled decorations had been pried off. A crack of lamplight showed from within. "Could this person refuse the Prophet anything he asks?" he said, and stood aside.

"But I am not a prophet," Isak said. He had never been that, no matter what others might believe. "Only a—" He tried to think how it should be said. "A servant of the gods," he said at last.

The man bowed his head. "Some serve more fully than others," he mumbled, as if ashamed.

Isak was terribly conscious of the bloody rag on the man's head. "Of some the gods expect more than from others," he said. "It is not an honor to be envied."

It brought a shrug. "The gods do what they will. I . . ." He touched his brow and nodded to the door. "I can only stand away from your path."

Such deference troubled Isak. It hadn't been earned; neither, it seemed, could he refuse it. Oddly humbled, almost furtive, he opened the door far enough to slip inside.

It was still the Chamber of Judgment, still the hall where the Council of Brothers had condemned him. Now, though, it had a far different look. Darkness filled it, scantly leavened by a flickering lamp in a corner. Its rich furnishings had been tumbled aside. On the dais where Sedmon's throne had been, under the pattern of sunbursts on the wall, Kalynn lay on her improvised couch. Halfway down the steps, overturned, the throne sprawled, aslant. Some of its jewels and gold were gone, thieved. Shadow was everywhere.

Before he obeyed the midwife's command to leave, he had stolen a moment to hunch down at Kalynn's side. "Will you teach me about the gods?" she

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asked. Before he could speak a reply her look of anxious hope became a hard-clenched grimace of effort and pain.

He gave her a strip of thick leather he had cut from the throne for her to bite on. "Everything I know," he promised. He could almost feel her pain himself, and his thoughts were full of the terrible things that could happen in childbirth. "I want to," he said. "When you are done with this, if the gods will allow."

She tried to smile, but then the pain came again and she could neither smile nor speak. Aimless, wild, her hand caught his wrist and squeezed until he thought the bones would crack. For the space of a heartbeat it was as if they shared one mind, knew only a common fear and hope and pain. Then the midwife clamped a hand on his shoulder and gestured him away.

Now he had come back with a farthing in his hand. An acolyte's cape had been spread over her, but that was the only change. The lamp in the corner, lodged behind a fallen chair, cast leaping splashes of light on the walls. The Pale One poured her softer, more restful pools of light on the floor. One of them included part of Kalynn's couch, part of the cape that covered her, and one pale hand.

The midwife intercepted Isak before he was two paces from the door. She blocked his way. Even in the dim light he could see her fierce eyes.

"I would speak to her," he said.

The woman shook her head. "Better you be letting her rest. Hard work it be, getting a child out. Later, when she be hurting less—"

"Isak?" Kalynn asked. "Is it you?"

"Kalynn—"

"Please. Let him come. It won't hurt as much . . ."

Thwarted, the midwife shot an angry glance around, but she stood out of Isak's way. "Remember, I spoke against it," she cawed, but Isak scarcely heard. He knelt close by Kalynn's shoulder, and hardly felt the blaze of pain from his knees. He hadn't thought about his knees. She smiled up at him; her face was in shadow, but he could see the smile.

"You're all right?" he asked.

"Going to be." She sounded very sure. She folded back the edge of the cape to show the child. "A girl," she said. "I'm glad."

Every child safely born was a cause to be glad. This one was incredibly small, so small his hands could have gone around it. It lay cuddled against Kalynn's side, one tiny paw pressed into her breast's softness. Suddenly exposed, it tried to burrow into her. Kalynn laughed. "I don't think she likes it out here."

There was something mysterious and miraculous about a new life. He wanted to touch it, to be sure of its reality, but fear of doing harm held him back. It looked so terribly delicate. "She's probably cold," he said. He lifted the cape's edge to cover her again.

"It's a cold world," Kalynn said. She shifted slightly, as if to move the child closer to her than it already was. It complained, then went quiet again.

"Not always," Isak said. For a time he had lived in a land where the oceans froze. "Not for everyone." Suddenly the lump of metal was in his hand; it had been there all along, but now he

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knew of its presence again. It was warm and slightly moist from the sweat of his grasp. "Look." He held it out between thumb-tip and finger, showed it to her.

At first she didn't know what it was, though he held it in the Pale One's light. With her free hand she reached up and touched a finger to it. "I don't . . ." she began. Then she knew. "A farthing? What . . . ?"

She didn't understand. It was a hollow moment. He hadn't planned to offer it that way, and the words he'd intended to use were gone like a broken bubble. Clumsy and artless, he'd blundered ahead, and now, though he wanted to call it back and start over, it was too late. He could only hunch there, foolish and miserable, with the farthing in his outstretched hand.

"You asked me once—" he began, and knew how lame it sounded, and stopped. And waited.

"I know I did," she said in a quiet voice. "I said a lot of silly things." She wasn't looking at him; her head was turned away, as if something in the deeper shadows next to the wall had to be watched. "Is it what you want?"

"Can you doubt?" he wondered. "But for you, I would not even have my life." That didn't sound right either. It hadn't anything to do with his reasons, but his reasons didn't fit into ordinary words.

Now she looked up at him again. "Isak, I have a child now." She moved her arms under the cape. "She isn't your child. And you . . ." Her voice held strain. ". . . you are a Prophet who has spoken for the gods, and for whom the gods have shown their favor. You could claim any woman you wanted, for the asking. You wouldn't need a farthing—or any coin at all."

It was a new thought, and strange; but it made no difference. "You have told me no reason I should go in search of something I have found already. And . . . and you know it was only a foretelling, and the rest of it was contrived."

"I would know it. Other women would not," Kalynn said.

"And what better consort for a Prophet than the mother of a child of the gods?" he asked.

"Isak, you know it didn't happen that way."

"I know what you have told me," he said. "So we would know each other's truth. Would it matter so much what others believe?"

"It wouldn't be true!" she protested.

He nodded. She was right. But it changed nothing. "I have learned that people believe what they want to believe, no matter what they are told," he said. "I think I will need a person close to me who knows my truth. I may need to be reminded of it."

He saw no response in her, no sign that she even heard. "And I think I will need someone who understands people better than I," he said. "I . . ." He plunged. "I want you to be that person," he said, and waited, but still she did not speak.

"Would you have me claim a woman by deception?" he asked.

At first he thought the sound she made was laughter. But why would she laugh? Her face was turned away from him. The mystery of her thoughts was more inscrutable than the gods. Wanting her to look at him, wanting her to know

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his want and his need, he touched her cheek, felt wetness.

Confused, he drew back. Marvelously more impossible to know than the gods. He waited, wondering helplessly what he could say. Finally, her voice came again.

"Isak, please. Give me time to think. I . . . I . . . I'm tired, and I hurt, and you're so clever with words, and ideas, and things. I can't . . ."

He didn't feel clever at all. "Do you fear I might persuade you to a thing you do not want?" he asked.

"I don't know," she confessed. "I think I'm just as afraid that you won't. I want . . ." She stopped.

"Yes?" he prompted.

"I don't know what I want," she said. "I want to be happy. I want you to be happy. And I'm afraid. . . ."

She had gone into danger with only a sword. She had come out victorious. And she had borne a child, all in less than half a passing. Now she spoke of being afraid.

"Fear nothing," he said. "I cannot promise happiness. Only the gods can give that, if they will. But happiness is what I want for you. I would try to help you find it." He sought her hand under the cape, to press his coin between her fingers. The ache in his throat was a fear she would thrust it away, but as their fingertips touched she caught his hand and held it fiercely. The coin was caught between their palms, hard and hurtful. She turned her head to look at him. He saw her hesitant smile.

Hoping, he thought, and dared to hope. Her fingers tightened, pressing the coin ever deeper into the flesh of his hand, until it was the only thing of which he had awareness. Without words, it was answer enough.

Kneeling there, for once needing no words, he lost all sense of time. Afterward, he knew only that time had passed when he became aware of a difference in the light. He looked up. The shadows were less deep, the colors had changed, the Pale One's light was not as strong, nor the lamp's. From the square below came a murmur of sound, shouts, fragments of a hymn. For a moment, as if dazed, he did not understand.

He got to his feet, hardly noticing the stiff pain in his knees. He hobbled to the eastern windows, dragged a chair from where it had been thrown, and climbed up on it. He leaned against the sill.

The sky was strange. He had thought no further marvel it might show could possibly surprise him; he was wrong. None of the wonders already seen had prepared him for this.

The blackness was gone, and with it all those tiny, inexplicable, myriad gods. High overhead it was blue-grey dark—the kind of sky sometimes seen when clouds shrouded it. Downward to the horizon it became lighter and lighter, gradually blending toward brightness, until at the horizon's edge above the serrate shadow of the mountains it blazed with a lustrous light more powerful than the Pale One's, almost as bright as a true god's. Had it been brighter he would have had to look away. And floating above the horizon a scatter of cloud tufts, but cloud tufts that blazed like flame and incandescent gold. As he watched, a higher cloud took fire and blazed with a steady, slowly expanding radiance—a red that

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reached higher and higher into the fabric of the cloud and, as the red crept upward, the regions where it had been became gradually orange, then amber, brightening all the while. Isak watched until his chest ached for lack of breath.

It was when he realized he hadn't breathed for a long time that he knew what it was that he saw. Or thought he knew. To make sure took only a moment. Dropping down from the sill, he crossed the chamber, found a chair to climb on, and mounted to one of the windows on that side.

The Pale One stood high. He'd expected that. The light she gave was faded now, though not yet dimmed to the chalky whiteness of her familiar self. The sky around her still was dark, though not as dark as when those tiny gods had sprinkled it. A few bright sparks still glittered in the west, where blackness had not yet given way, but even as he looked one turned faint, then vanished. As the sky inexorably brightened, another went, and then one more. He looked up again at the Pale One. Without reference points or measuring tools it was hard to estimate accurately, and now she no longer cast shadows. Nevertheless, it was clear that she had moved a little past the zenith and had begun her descent toward the western horizon.

To know that was to know enough. He slipped down again to the floor, returned to Kalynn's couch. He knelt beside her. "Can you stand?"

"I'd like just to lie here," she said. "I'm awfully tired. I think I might even sleep for a while."

Isak could remember having slept only three times in his life. He thought how exhausted he had felt each of those times; did giving birth tire a woman that greatly? As if to answer him, the midwife shuffled across the floor. "Near enough half my ladies sleep when they be done," she said. "This one be strong and healthy as a team of drome, but best to be leaving her be."

Isak nodded, accepting it, but he spoke to Kalynn. "I think you would want to have seen this." And, looking up at the midwife, "If you would see a wonder . . ." He tilted his head toward the eastern windows.

The midwife snorted. "What be in her arms be wonder enough."

Kalynn's chin lifted. "Help me up."

She let him take the child. The tiny body struggled feebly and protested loudly until he maneuvered it inside his robe and held its nakedness warm against his ribs. Supporting it in the crook of one arm—he found he could do that—he helped Kalynn rise with the other. He helped her walk to the windows. She was indeed weary. She leaned against him. He helped her up on the chair.

"Isak," she breathed, "it's beautiful."

He climbed up beside her. Now the whole eastern sky was ablaze. Rich ruby hues, and amethyst, and shiny gold, against a tapestry of flawless blue. "That is Blazing Alpher," he said, "coming up to the edge of our world. Already we see his light. Any moment now he will show himself."

As he spoke, a blood-red spot, brighter than the sky, so bright it burned, appeared in a notch between two peaks on the edge of the world. Not yet so bright they had to look away, but almost. Slowly the spot enlarged, became an arc

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above the ridgelines, and lifted slowly, like a leviathan lifting its brow from the water, and became a full half-circle, bloody red and incredibly huge, and burning and sending its flames across the sky in streamers and plumes, bathing every scrap of cloud and all the land in its blaze, and lifting at last completely free of the horizon, red and round and hot, so hot that now they had to turn their eyes away, and for a long time after, in the lesser light inside the Chamber of Judgment, green glowing lights floated in the air wherever Isak turned his head.

"I knew he would come," he said at last. "The darkness will go now."

His arm was around Kalynn and she leaned her weight against his side. Against his other side the infant stirred. A small hand searched blindly, clutched a fold of skin, tried to pluck it away. Already the child was trying to learn what kind of strange world she found herself in.

"Telling us we have another chance," Kalynn said. "That we can . . ." She ran out of words.

"Perhaps," Isak said. He didn't know what the gods were saying. Perhaps they were saying nothing at all. He would have to think. And he would have to tell her about the Temple. But that could wait.

"Did you talk to Father?" she asked, moving only a little in the curve of his arm. Alpher's light shone on her cheek and her hair, a token of his favor. Her face seemed to glow.

"Had I offered him a farthing, would he have thought me serious?" Isak asked. "Or honorable? No. It was for you to accept or refuse."

She trembled with sudden, quiet laughter. He saw the delight on her face. He tightened his arm around her. Her head leaned under his chin. Her hand felt the child under his robe.

"I should let you rest," he said. "Here, I'll help you down."

But she did not move. "I'll talk to Father," she said against his throat. "What would you say if you were him? A Prophet's farthing should be worth something."

He let her talk. Her happy voice woke music in him, and her body was warm against his, promising mysteries. Her child . . . it seemed suddenly proper to think of it as his own, that it belonged in the cradle of his arm. And the gods . . . ?

He looked. The red and yellow and orange and gold were all gone from the sky. Only blue remained, and white tufts and wisps of cloud, quickly thinning, and Alpher's blaze now as bright as he had ever been, as if nothing had happened, nothing had changed.

"A whole world," he said, speaking into the scent of her hair. He looked again toward Alpher, now too bright to look at for more than an eye-blink, ascending his sky, remote, all-watching, silent, giving his light to all the world.

So much he still did not understand, so much he ached to know. Those tiny gods; the Pale One's unexpected light; how the gods caused rain to fall or not fall, clear skies and cloud, cold winds and warm. He wondered if he would ever know the secrets of those things. Would mystery always cloak the gods? What knowledge might they yield?

He took a breath. So many questions! Dared he hope he would ever find an

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end to them? Every discovery he had ever made had contained, like a kernel within its pod, new mysteries.

He felt a vision. God-sent? Simple memory? A mountain road, and in sight ahead, mountains beyond mountains beyond the mountain already climbed; but that was no reason to abandon the road. Rather, it was reason to press on. Nothing behind was worth returning to. The journey ahead would be interesting. There would be adventures.

Kalynn's lips moved against his throat. No words; only a soft, contented murmuring. Her weight rested against him. Asleep? Dreaming? There were stories told about dreams.

"A universe," he said. Full of marvels, he thought. "A universe." ■

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My special thanks also to Isaac Asimov. Without "Nightfall" there could not have been "Dawn." I am in his debt.

—Dean McLaughlin

IN TIMES TO COME

● In our next issue we take a breather between serials and feature a diverse collection of novelettes and novellas. Wayne Barlowe's cover is for a long one, "Which Way to the Ends of Time?", the latest of Michael McCollum's paratime stories. We'll also try again to fit in Steven Gould's "Gift of Fire," a very different kind of story from the one rated so highly among last year's short stories—but just as well done. And then, very probably, we'll have "Jolly Roger," by Gary Alan Ruse, which in some respects is a little more familiar type of time story than McCollum's—but it's a good deal more outrageous than most.

The fact article is by G. Harry Stine, well known to Analog readers as one close to both science fiction and real technology. There's a growing tendency to believe that the real space age will be ushered in not by government projects but by private industry—but why does private industry seem to be the last to know? Harry has gone right to the source and asked several industrialists why they aren't moving faster into space—and their answers shed a good deal of light on what will need to be done in the near future.

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Dr. Robert A. Freitas, Jr.

EXTRATERRESTRIAL ZOOLOGY

"Two large dark-coloured eyes were regarding me steadfastly. The mass that framed them, the head of the thing, it was rounded, and had, one might say, a face. There was a mouth under the eyes, the lipless brim of which quivered and panted, and dropped saliva. The whole creature heaved and pulsated convulsively. A lank tentacular appendage gripped the edge of the cylinder, another swayed in the air. . . . There was something fungoid in the oily brown skin, something in the clumsy deliberation of the tedious movements unspeakably nasty."

—H.G. Wells, *The War of the Worlds* (1898)

Pretty disgusting, huh? The classic tales of science fiction are full of Bug-Eyed Monsters (or BEMs as they are affectionately termed by cognoscenti) which invade planets, threaten towns, attack rocket ships, and carry off shapely human females. Hollywood producers apparently are convinced most extraterrestrial (ET) beings fall in one of four zoological categories: (1) Human or humanoid, (2) oversized animals, (3) amorphous blobs and pods, and (4) formless energy beings.

Can't we do any better than this?

Quite! In fact, anyone with access to a good library can walk in and read all about the biology of one of the most fascinating, richly populated worlds anywhere in the Milky Way: Earth! We inhabit a queer planet with many strange settings and fabulous living creatures, altogether an excellent example of what extraterrestrial life may be all about. To a team of Interstellar Zoologists, researching sentient terrestrial mammals out here in the galactic boondocks, our world is as rare a planetary zoo as any in the Milky Way.

Xenobiologists have formulated a simple rule, called the Assumption of Mediocrity, which says, in essence, that Earth should be regarded as "typically exotic." The unusual solutions devised by evolution on this planet to cope with the problem of survival will find their parallels, though not necessarily their duplicates, among the living species of other worlds. As biologist Allen Broms once remarked, "life elsewhere is likely to consist of odd combinations of familiar bits."

Strange Life

Life as we know it is based on cells:

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small, neat packages of living protoplasm containing all of the biological machinery necessary for survival. Human body cells average a few microns in size. (One micron is a millionth of a meter, about a hundredth of the thickness of the page these words are printed on.) The smallest living thing on Earth capable of independent metabolic activity is the PPLO, or "pleuropneumonia-like organism," which measures 0.1 microns. Microbiologists estimate that the smallest cell that could, in theory, exist would measure about 0.04 microns in diameter. It is amusing to speculate that the alien analogue to a human being, constructed in the same form but using these miniature cells, would weigh a mere 50 milligrams and stand only 5 millimeters tall—hardly the thickness of a pencil. Whether creatures so small could retain a human-level intelligence is anyone's guess.

Fairly large extraterrestrial lifeforms might well exhibit acellular physiology, or be unicellular. For example, at one stage in their life history, slime molds are tiny one-celled flagellates capable of individual multiplication by simple fission. In the later "plasmodium" stage of development, large clumps of these creatures fuse together and their cell walls dissolve away to produce an amorphous acellular mass of living protoplasm which can grown as large as 25 centimeters or more. Further, the largest known single living cell was the egg of the now-extinct half-ton elephant bird or "roc bird" (*Aepyornis maximus*). This egg measured about a third of a meter across and weighed 15 kilograms.

The number and kinds of organs in alien creatures may also be highly variable. For example, earthly squids have two different kinds of hearts—one for venous and a separate one for arterial blood—and the common earthworm (*Pheretima*) has a dozen hearts. Two extinct dinosaur species, Brontosaurus and Diplodocus, had two brains, one in the head and an even larger hunk of neural tissue in the hip region. (The volume of this "sacral enlargement" in Stegosaurus, another fossil animal of grand proportions, was perhaps twenty times larger than the brain in the cranial cavity! And the entire body of an insect is its "lung"—oxygen is carried directly to cells by an intricate network of tracheae or microtubules permeating the entire organism.

Sometimes, organs combine several functions in one—such as the human mouth. ETs need not have the same combinations as we. They may have identical or separate organs for eating, drinking, excreting, breathing, and speaking. The dolphin, for instance, eats through its mouth, breathes through its blowhole, and "speaks" through its "ears." The land snail's lung opens into a passageway other than its food canal, and sea cucumbers breathe through their rectums (called "anal respiration"). The cloaca of frogs and many other animals is a single organ which combines excretory and reproduction functions. Brachiopods can only vomit excrement from their "blind intestine" (a kind of alimentary cul-de-sac), and the members of phylum Nematomorpha (long worms) eat solely by direct absorption of nutrients through the skin—for they have no mouths.

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How Large?

How big can ETs be? To answer the question we need to understand something called the Square-Cube Law. This universal geometrical principle, first recognized by Galileo more than three centuries ago, holds that volume always increases faster than surface area as size increases. A solid cubical box whose edge is doubled increases in surface area by a factor of two squared (2x2), or four; whereas volume, hence mass, increases by two cubed (2x2x2), or eight.

It's easy to apply this to biology. Picture a bony extraterrestrial herbivore placidly grazing in some alien meadow. Suddenly we double its size all over. The animal's leg bones, now twice as thick, have quadrupled in cross-sectional area; but the creature weighs eight times as much so its bones must sustain double the pressure. It may collapse under normal exertion unless it grows proportionally stouter limbs to handle the added physical stress.

All parts of an animal must be re-engineered when size increases. Like bone, muscle strength is determined by cross-sectional area. Humanoids twice as large need quadruply thick biceps: otherwise they'd be pulling eight times the mass with only four times the force. Lungs, kidneys, intestines and other blood filtering organs function according to surface area, so must either increase in mass or become more convoluted at larger body sizes.

The horror movies about giant insects ravaging the countryside are really quite impossible, even on low-gravity worlds. A bug as large as a house would weigh a billion times times more than its flea-sized Earthly cousins. Its thin spindly legs would be called upon to sustain stresses thousands of times greater. To walk at all the overgrown arthropod needs muscles proportionally thousands of times thicker; unfortunately, vital tissues already fill the hollow skeleton of the tiny original. It it did not collapse under its own weight or was not immobilized by the feebleness of its muscles, an overgrown insect would starve to death because its stomach would be a thousandfold too small to absorb enough food; or it would suffocate because its tracheae could carry only a thousandth as much air as needed.

Sea creatures are free of gravity at neutral buoyancy, but still they're dogged by the Square-Cube Law. Bodies in motion like to continue in motion—extraterrestrial leviathans larger than whales would experience serious steering, turning and braking difficulties because of their relatively great mass compared to the area of their control surfaces. Cornering too fast might cause stresses in excess of the tensile strength of biological materials and the behemoth would literally snap in two. These problems are familiar to pilots of modern supertankers, huge ships requiring kilometers to turn or stop.

Gravity and Life

The respected zoologist D'Arcy Wentworth Thompson once speculated about the effects of gravity on evolution. "Were the force of gravity to be doubled," Thompson declared, "our bipedal form would be a failure, and the majority of terrestrial animals would resemble short-legged saurians, or else

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serpents. Birds and insects would suffer likewise, though with some compensation in the increased density of the air. On the other hand, if gravity were halved, we should get a lighter, slenderer, more active type, needing less energy, less heat, less heart, less lungs, less blood. Gravity not only controls the actions but also influences the forms of all save the least of organisms."

It is true that the maximum weight of living species cannot exceed the crushing strength of bony material. But animals are not designed to stand still—if they were, human legs could be a few millimeters thick. Instead they must bear up under the peak pressures and accelerations encountered during normal running, jumping, and other strenuous survival activities. A horse at rest seems greatly overbuilt; on the racetrack where it may pull to a halt in a second or less, near the breaking point of its bones, the design limits are more fuily exploited.

Clearly there are other factors at work besides gravitational loading in fixing maximum size—predator/prey relationships, running speeds, food requirements, oxygen levels, ecological constraints, and so forth. Still we can estimate how gravity might influence evolution, based on Earth's biological history. The largest land creature alive today is the African elephant, weighing an impressive 6600 kilograms. *Tyrannosaurus rex*, one of the largest land carnivores, was at least 8000 kg. The *Baluchitherium*, the largest extinct land mammal, was built like a hornless rhinoceros, and carried a bulk of more than 22,000 kg. The largest land animal ever may have been *Brachiosaurus*, of which some specimens may have weighed 111,000 kg, but we'll ignore this majestic brute because he probably had to spend lots of time sitting in swamps resting his tired bulk. We may conservatively guess that the heaviest exclusively land-dwelling creature plausible on a 1-gee planet is around 22,000 kg.

How massive will alien animals be? Simulations of model solar systems by Dr. Stephen H. Dole of the RAND Corporation and others suggest that terrestrial rocky worlds with atmospheres suitable for life should have surface gravities between about 0.2 and 2.0 Earth-gees. Now, if gravity doubles, bone stress won't increase if a creature's height is halved while other dimensions remain the same. If maximum height is inversely proportional to gravity, then maximum volume (hence mass) goes inversely as gravity cubed. By this measure the heaviest animal on a 2-gee world is about 2800 kg, while on a 0.2-gee planet (like Saturn's moon Titan) the most massive beast could conceivably reach nearly three million kilograms—though I'd hate to try to keep it fed! So animals like walruses, small elephants, even 70 kg humanoids are quite possible even on the heaviest of all reasonable Earthlike worlds. No need for "powerfully built, squat creatures, perhaps rather like an armoured pancake on multiple legs . . . limited to slow, creeping motions across the surface."

Of course, gravity *will* affect design. In any given mass category high-gee animals should have shorter, stockier bones than those evolving in low-gee

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environments. To provide proper support, bone cross-section must increase directly with weight. Weight is the product of mass and gravity, so bone diameter must be proportional to the square root of gravity.

Let's apply this to man. The typical human femur, the most perfectly cylindrical and largest single bone in our bodies, measures 3.5 centimeters in diameter. Using the above square-root relation, we find that the thigh-bone should increase to 4.9 cm on a two-gee world or shrink to 1.6 cm on a 0.2-gee planet for identical support of a 70 kg human body mass. Experiments have confirmed that animals reared in high gravity grow thicker bones, stronger hearts, and lose fat, but alien creatures will not appear wildly over- or underbuilt as compared with Earth life of equal mass.

Alien Skeletons

Boneless lifeforms in the sea can grow to enormous sizes. There are other advantages to life without a rigid frame we can hardly appreciate. For instance, an octopus, often called the supreme escape artist, can stretch itself incredibly thin, passing rubberlike through small holes or narrow crevasses and sliding confidently across desktops and the decks of ships.

But a creature of land is a denizen of gravity. Surface life must evolve some means of physical support or be reduced to a groveling mass on the ground. On Earth the most common frameworks are the *exoskeleton* and the *endoskeleton*. The former, typified by insects and crustaceans, is a hollow bony tube packed with the creature's viscera. The latter, which all vertebrates have, is a central spine from which vital organs hang like coats on a hatrack. Exoskeletons are bony material surrounding gut; endoskeletons are bone surrounded by gut.

Which design is better? Bioengineers point out that a tubular column always has greater strength than a solid beam of the same mass. Tubes give twice the resistence to bending and many times the opposition to buckling. Mechanical advantages are best exploited by exoskeletons because of the greater bony surface area to which muscles may be attached.

So why be vertebrate? The answer is that we've considered only static strength. Large endoskeletons outperform exoskeletons under dynamic impact loading—like falling out of trees—which is why the largest of all animal species have worn their bones on the inside. Massive alien insectoids are not impossible, just less likely. Falling impacts shouldn't be as severe on low gravity planets, and large active arthropods might survive in a rich oxygen atmosphere. The greatest carapaced creatures on Earth have ranged in size from a tenth of a meter for the South American tarantula on land up to several meters for certain fossil marine arthropods.

ETs have other choices open to them. One of the most popular alternatives among xenobiologists is called the "basket skeleton," found on this planet in marine echinoderms (sea cucumbers, starfish, sea urchins) and the cormorant (a seabird of the pelican family). Physical stress passes through the body along

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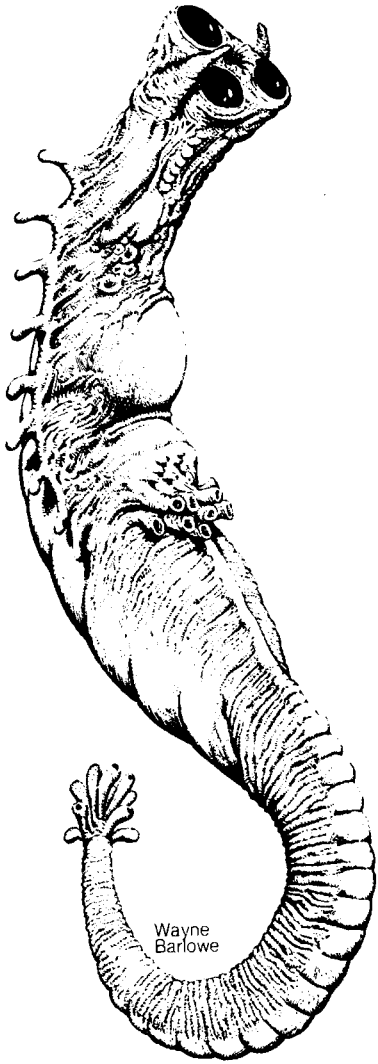

a kind of bony trellis, an unusual internal arrangement which one wag has facetiously termed "bowels in a birdcage."

Another possibility is the double spine or multiple endoskeleton. On Earth flatworms and other free-living turbellarians have twin neural channels running the length of their bodies. Alien "ladder skeletons" might improve postural stability and provide greater strength on high-gravity worlds, though turning or twisting motions of the trunk might be restricted even if the multiple support posts are jointed or segmented.

A third alternative is the "hydrostatic skeleton," surprisingly common on Earth. Animal bodies are kept stiff by pressurized fluid trapped in a sack of tough skin. Mostly only small earthworms and nematodes have this support, but massive sea creatures such as sharks compress their innards to help negotiate sharp turns and even man uses the contents of his abdomen as a hydrostatic skeleton. Large aliens might evolve a liquid skeleton inside taut, fiber-strengthened tubes with extensive reinforcing musculature—purely hydrostatic caterpillars, for example, have about 4000 individual muscles as compared to less than 700 for a human being.

How Many Eyes?

Nature often uses the same solution to a given problem encountered by many independently evolved species. Perhaps one of the most striking instances of this "convergent evolution" is the "camera eye" invented separately by at least five major terrestrial animal phyla (chor-

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dates, molluscs, annelids, coelenterates and protists). Each have radically different developmental histories. Naturally there are a *few* discrepancies—for example, light-sensitive cells in molluscan eyeballs point towards the light, the opposite of vertebrates. But the adjustible lens, retina, pigments, focusing muscles, iris diaphragm, transparent cornea and eyelids all are immediately recognizable. Nature is perhaps trying to tell us something: The camera eye is ubiquitous because it's simply the best design for the job, on this or any other world.

The next most successful—indeed *more* so if you just count species—is the compound eye of insects and crustaceans. Each organ looks like a small multifaceted jewel, actually a tiny bundle of optical tubes that direct light onto a large matrix of individual photosensitive spots on the retina. The image forms a composite mosaic of thousands of little light-dots. (Dragonfly eyes have more than 28,000 facets and can discern motion up to twelve meters away.) The compound eye, however, has such poor resolving power that an insect poring over this page of print would be quite unable to make out the individual letters, so large ETs will find the system unattractive. It seems best for smaller creatures—if a flea had a spherical lens eyeball like that of humans, the pupil would be so minute that diffraction effects would utterly ruin the image.

Other visual techniques of limited importance on Earth may be emphasized on other planets. For instance, alien species may have "pinhole camera" eyes like the chambered nautilus, a beautifully simple system consisting of an open optical pit without lenses, exceptionally useful in water. In the "scanning eye" of the snail, light penetrates a simple crystalline lens and is scanned by a single retinal nerve sensor moving across the visual field, slowly building up an image of the environment. The principle of the optical reflector telescope has never been developed for direct imaging on *this* world, though many species use a biological mirror assembly to increase camera eye sensitivity (the tapetum of the common tabby cat) or to attract prey using deep-sea "searchlights" in conjunction with bioluminescence (the retractible reflectors of the luminous squid).

How many eyes are best? Nature usually economizes, so a single receptor organ is good enough for nondirectional sensing. Most large organisms have but one organ of smell and one of taste. On the other hand, directional senses can make good use of the benefits of stereo. Triangulation and depth perception require at least two physically separated receptors, and there seems little to be gained by going to more than a single pair. As astronomer Carl Sagan once pointed out, "Three eyes represent not nearly the same improvement over two that two represent over one."

Nevertheless a few animal species do have more than one pair of imaging eyes. Zoologist Norman J. Berrill of McGill University in Montreal describes the dinnertime antics of the spider, which has four pairs of eyes: "The rear pair serve to watch behind for either food or danger. The other three pairs work together but in succession. If

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something comes within the range of vision of one of the outermost pair, the head turns until the object is brought into the field of the two pairs of eyes in the middle, and the spider then advances. When the object is brought into focus of the forward pair, the spider jumps to attack." The ultimate limit is probably reached by the scallop, whose literally hundreds of tiny, beautifully constructed nonimaging "eyes" are spread around the circumference of its mantle like running lights on an ocean liner.

What about eyes on stalks? Most xenobiologists regard this as a rather unlikely adaptation for thinking animals. Eyestalks require a hydraulic support system inefficient except in small animals. Eyes are vital senses for large organisms, yet stalks could be lopped off by predators with a single stroke of claw or pincer, permanently depriving the owner of sight. Periscoping eyes unprotected by bone are also more prone to common injury—in an accident, stalks could be bumped, slammed or squashed all too easily.

Alien Senses

Vision, of course, is simply the detection of one narrow set of wavelengths of light within the entire electromagnetic spectrum. One alternative to "visual" sight is infrared (IR) vision, or seeing with heat waves. The rattlesnake is quite good at this—the creature has two imaging eyeballs operating in the visible, and two conical pits on either side of the head which permit binocular IR sensing of temperature differences as little as 0.002 °C. The theory of optics predicts that alien infrared eyeballs with resolution close to that of the human eye could have apertures as small as 4 centimeters at 93,000 Angstroms (the peak wavelength of black body radiation emitted by a warm human body). This compares well with the size of the eye of the Indian elephant (4.1 cm), the horse (5 cm), the blue whale (14.5 cm), and the largest cephalopods (up to 37 cm).

Radio vision is another possibility, although there are two major evolutionary problems with this. First, it is difficult (though not impossible) to imagine planetary surface conditions in which the illumination in the radio band is equal to or greater than the brightness in the visible, thus giving radio vision the competitive edge. Second, radio sensors would have to be on the order of 10–1000 meters wide to achieve human-eye acuity, though this resolution may not be absolutely necessary.

Assuming life evolves primarily on planetary surfaces and under air, other forms of vision—very low frequency, ultraviolet, and x-ray—are unlikely because these wavelengths are strongly absorbed during the passage through atmosphere or ocean. Static electric field sensing has been documented in numerous species, notably sharks and electric fishes, and sensitivity to magnetic fields has been found in snails, pigeons, dolphins, bees, and many other animals. The acoustical, tactile, and chemical spectra of sensation have also been well exploited by life on Earth.

One possible extraterrestrial sense often overlooked is the ability to detect radioactivity. On a world with highly

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concentrated radionuclide ores near the surface, or on a planet in the throes of a global nuclear holocaust, biological geiger counters would give warning to steer clear of large tracts of radiation hazards. The "radioactive sense" was once artificially bestowed on a small group of laboratory animals by wiring portable geiger counters directly to the fear center of feline brains. When confronted with a pile of radioactive materials in one corner of their cages, each cat shied away.

The key to alien senses is survival—any environmental information that would permit an animal to better compete for the limited resources available is a valid candidate for sensing. For example, we could imagine a sophisticated meteorological sensorium evolving on a world cursed with highly volatile, perpetually inclement weather. Humidity and barometric sensors would be essential, as would anemometers to calibrate wind velocity. The ability to sense changes in atmospheric composition, such as the carbon dioxide detectors possessed by honeybees and fire ants, would be useful. Atmospheric turbidity, closely related to developing weather patterns, greatly influences the degree of skylight polarization—sensors responsive to the intensity and distribution of polarized light might permit their owner to seek shelter from the elements before disaster struck. The seeming ability of many animals to sense an earthquake or tornado before it arrives may relate to their perception of very low frequency infrasonics or minute electrical field variations immediately preceding the event. And the allegation that elephants can sense water located a meter or so beneath the surface of apparently dry riverbeds is unproven scientificially, yet the fact remains that such biological dowsers would be far more likely to survive on a drought-stricken planet.

How Many Legs?

On strictly mechanical grounds, three points are needed geometrically to define a surface plane—two points make only a line. ETs trying to stand up on just one or two levers will promptly fall flat on their faces. We bipedal humans manage to remain erect only because our large feet provide additional points of contact with the ground, but without toes or feet a minimum of three legs is necessary.

Are tripedal aliens possible? Traditional biologists say no. A walking three-legger must lift at least one limb off the ground, at which instant it loses its planar support base, a situation statically unstable and dynamically precarious. Four legs seem better from an engineering point of view, as the creature can remain balanced when a leg is in motion. Ancestral fishes only have fins in pairs, so mustn't all limbs evolve in pairs as well?

Xenobiologists remain unconvinced. Most running bipeds and quadrupeds keep two or fewer limbs on the ground during locomotion, so three-point dynamic stability is probably unnecessary. Land life need not always evolve from pair-finned fishes—descendants of, say, a starfish might be odd-leggers. Most persuasive, however, is the simple fact that tripeds exist on Earth! The extinct

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Tyrannosaurus rex and a few large contemporary creatures such as the kangaroo run bipedally but stand tripedally. The tails of these animals are as strong and thick as the forelegs and are regularly used for postural support. Indeed, when kangaroos fight, they rear up on their tails, freeing both legs to deliver crushing kicks to opponents.

More legs than four are plausible even for massive, intelligent animals. Odd appendages are often used for highly specialized purposes, as witness the prehensile tail of monkeys and the dexterous trunk of elephants. The key to higher multipedia is neural control. The nervous circuitry for an extra limb is far less than that required to add, say, another eye. Muscles need thousands of new neurons, but eyeballs need millions. About one-third of the mammalian brain is committed to sensory functions, whereas only a small slice handles motor control. ETs are much more likely to have extra arms than extra eyes or ears.

Dr. Bonnie Dalzell, a writer-paleontologist who helped Larry Niven work out some of his fictional aliens, insists that vertebrates on Earth have four limbs solely because of the common descent from fishes adapted to free-swimming conditions in large open oceans. These fish needed only two independent sets of diving planes to make a go of it in the sea. Perhaps if we evolved instead from *Euthacanthus*, a Devonian Period fish boasting no fewer than seven pairs of fins, we might be hexapodal or morepodal today ourselves.

Dr. Dalzell expects to find intelligent six-leggers on worlds with small, shal-

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low oceans. There, bottom-dwelling fishes would become the predominant coastal and freshwater lifeforms early in evolutionary history. If the planet has a very seasonal climate, perhaps accompanied by large-scale periodic evaporations of lakes and seas, few fish species could evolve into good swimmers as on Earth. Marine creatures with many pairs of fins would have the advantage, ultimately inheriting the land and producing a rich ecology of multipodal animal life.

There are many advantages to six-legged living. On high-gravity worlds hexapedia is a good way to distribute mechanical stresses and help reduce the danger of bone breakage. Injury or loss of a limb is more catastrophic for four-leggers than for six-leggers (who have "spares"). Hexapods also have better balance since, unlike quadrupeds, they can keep a stable support tripod on the ground even when running at high speeds. And it shouldn't be too hard to coordinate all those legs. Says Dalzell: "Earthly insects with three pairs of legs are hardly noted for their well-developed mental powers, but most of them walk just fine."

Of course, legs are not the only game in town. The potential of rotary motion (to pick one possibility of many) cries out for fulfillment. A few years ago biologists made the amazing discovery that the tails of tiny bacteria are driven by minute ionic motors complete with rotors, stators, bushings and freely-rotating drive shafts spinning up to 60 cycles per second. The rapid back-and-forth wiggling of flagella we see under the microscope is actually a complicated helical twisting movement more akin to a propellor screw than to a simple fishy undulation. This finding contradicts the long-standing dictum that living organisms may not contain detached, self-rotating parts.

Rotary motion may be possible for large animals too! Picture a small Earth-like world with little tectonic activity and broad, flat continental shelves flooded to a depth of five or ten meters during global warm spells. A creature not unlike the molluscan cuttlefish *Sepia* hovers near the bottom, stalking small fish, shrimps, and crabs, sometimes jetting about by expelling water rapidly from several exit portals like many other cephalopods. Occasionally sand particles jam in a portal, causing irritation. The animal responds by encasing them in a perfectly smooth spherical pearl, much like those of the modern oyster.

Millions of years later an Ice Age arrives. The retreating shoreline leaves behind vast tracts of smooth hard continental shelf. Forced into ever more turbid, colder, shallower waters, we might imagine our cuttlefish eventually abandoning the sea for land, evolving into a "caster creature." Its jet ports now permanently plugged by large pearly structures almost from birth, these animals might develop the ability to roll along the graded continental raceways. Speed is controlled by internal sphincters aided by heat sensors for guided braking on gentle downhill stretches and a "low-gear" muscular assist for steep climbs. Tentacle arms like ski poles provide additional stability on fast runs along the coastline.

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Air Power

How big could flying ETs evolve? On Earth the albatross is pretty close to the maximum. This 10 kilogram bird reaches wingspans up to four meters and needs a lengthy runway to achieve takeoff speed of 20 kph. This minimum velocity is called the "stall speed" and is partly determined by air density. Venusian pigeons could remain airborne at speeds ten times slower than their Earthly cousins, whereas Martian birds of similar size and shape would have to fly ten times faster to stay aloft.

The main factor fixing avian size is atmospheric pressure, not gravity as some erroneously believe. On high-pressure worlds, alien bird creatures can have surprisingly small wings and large masses. An extraterrestrial with the mass of a man could fly with the wings of an albatross in air just five times thicker than Earth's, and a Venusian albatross could make do with stubby wings smaller than the page on which these words are printed.

Planetary surface gravity has less effect on size in part because it varies far less than air density from world to world. For the same ease of flight a pigeon on a 2-gee planet with Earthlike air must increase total wing area by only 75 percent; on a bantam-weight 0.2-gee world, wing surface may decrease 75 percent. Gravity also influences stall speed. An albatross on a 2-gee planet needs a 40-percent runway extension; on a 0.2-gee world it can get by with 55 percent less. Massive extraterrestrial avians are more likely on puny planets with dense atmospheres.

How many wings are best? Most common among terrestrial species is a single pair which generate lift by actively beating the air something like the blades of a helicopter rotor. Less common is the "airplane" system, with one pair producing passive lift (like the wings of an airplane) and a second pair taking the more active role (like propellors). Adding yet more wings would serve no useful purpose, hence are unlikely to evolve. Only a very few insect species on Earth retain vestigal traces of an ancestral third wing pair, and these are degenerate and useless for flight.

Alien air travelers may have no wings at all! There are many alternatives that have never been fully exploited by evolution on this planet. Consider, for example, the principles of the rocket, the glider, and the balloon.

A high-gravity world with abundant seas and a warm, thick oxygen atmosphere might produce a "rocket fish" predator, patrolling the coastal shallows and preying on bird-sized torpid insect life thickly swarming high up. Much like the toy plastic projectiles that shoot the length of a playing field when fully charged with water and compressed air, the rocket fish bolts from the sea skyward and mouthes its dinner on the fly. Such an animal must have a sturdy posterior pressure cannister that can be discharged rapidly through a rigid bony nozzle, rechargeable in minutes using powerful sphincter muscles, internal gas generation, or osmosis. Earthly precedents include the jet propulsion of squids and octopuses, the pressurized chemical sprays of warrior termites, and the boiling liquid jet of the bombadier beetle.

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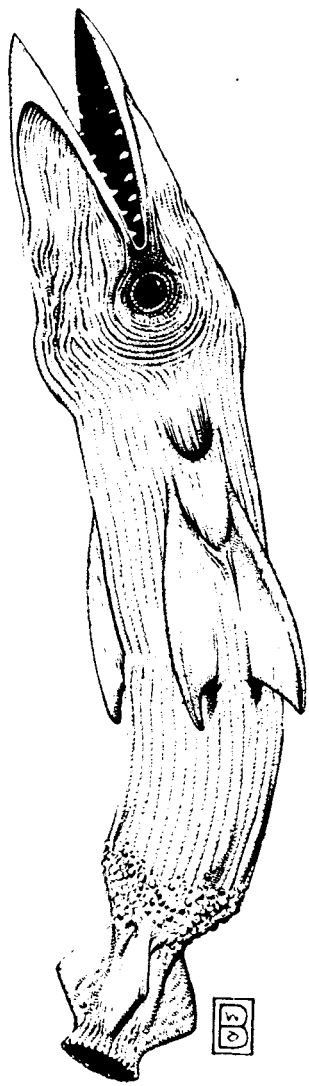

A lightweight planet with high winds might be ideal for the evolution of sentient "parachute beasts," large aerial aliens able to navigate the airways of their world by manipulating sturdy chutes or simple gliding surfaces. Vultures can sail for hours with little effort using strong mountain updrafts to gain altitude, but other worlds may be even better suited for this mode of flight. Further terrestrial precedent includes the aerial dispersal of spider young—spiderlings crawl to the tip of a blade of grass, raise their tiny abdomens and let fly a thin silken thread, then hop aboard as a gust of wind catches the gossamer strands and whisks them away into the sky.

The idea of balloonlike living organisms is an old one both in science and science fiction. Bonnie Dalzell designed an "airship beast" for the Pick-a-Planet exhibit at the Smithsonian's National Air and Space Museum. These creatures supposedly inhabit a world with cold winters, heavy gravity and a thick atmosphere. Twice a year the herbivorous hundred-kilogram blimps inflate their many lifting bags with metabolically generated hydrogen gas and drift to the opposite hemisphere to avoid the seasonal chill. Strong winds are an advantage, but predators are numerous and many noble aeronauts are lost during the migrations when a chance bolt of lightning strikes and ignites their flammable bodies. On Earth the Portuguese man-of-war, the chambered nautilus, and swimbladders in fishes provide precedent for a balloon lifestyle in a fluid medium.

Sail power has also been largely neglected in biology for animal locomo-

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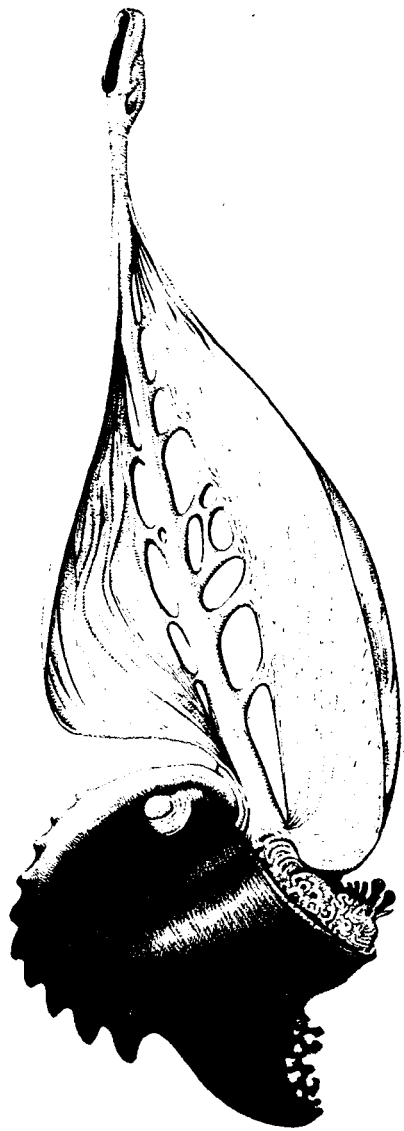
tion. One of the few examples on this planet is *Velella*, a small, baggy, disk-shaped sea creature whose sail-like dorsal fin permits it to drift slowly with the wind. Another example is, surprisingly, the whale! These majestic cetaceans sometimes "stand on their heads" exposing only their giant broadleaf tails above water, catching gusts of wind and playfully "sailing" for hundreds of meters before coming up for air.

More than forty years ago Olaf Stapledon speculated on the possibility of a true biological sailboat. Let us imagine a cephalopod with a heavy concave shell living in the bays and estuaries of some alien world. Over the years the species gradually acquires the ability to float boatlike on the inverted shell as an aid in migration. These creatures drift with the shore currents, feeding on surface algae and nibbling the tops of seaweed stalks. In time the shell could become better adapted for navigation, perhaps with a streamlined undercarriage, allowing the ET to better chart its course between known patches of food and to escape its predators. Eventually it gains still more speed with a crude sail, a thin membrane growing from a shank of cartilage in the animal's belly. With further evolution the membrane becomes retractable, even delicately manipulatable by fine muscles. At last the emergency of a brain and sensory organs strictly comparable to those of higher molluscs on Earth makes possible a kind of living clipper ship complete with masthead (forward sensors), jib, mainsail, riggings (extensible tendon), and a rudder.

Every habitable planet has millions of living species and billions of extinct



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ones, and there are many trillions of useful planets in the universe. This adds up to an incredible diversity of life. Christian Huygens wrote in *The Celestial Worlds Discover'd* (1698) that "Nature seems to court variety in her Works, and may have made them widely different from ours either in their matter or manner of Growth, in their outward Shape, or in their inward Contexture; she may have made them such as neither our Understanding nor Imagination can conceive." Whether Huygens's prophecy is true is something we can determine only by traveling to faraway worlds and sampling extraterrestrial ecologies at close hand. Perhaps, someday soon, we will make this epic journey. ■

FOR FURTHER READING

Norman J. Berrill; *Worlds Without End: A Reflection on Planets, Life and Time,* Macmillan, New York, 1964.

R. McNeill Alexander, G. Goldspink, eds.; *Mechanics and Energetics of Animal Locomotion,* John Wiley & Sons, New York, 1977

Bonnie Dalzell; "Exotic Bestiary for Vicarious Space Voyagers," *Smithsonian* 5 (October, 1974):84-91.

Doris Jonas, David Jonas; *Other Senses, Other Worlds,* Stein and Day, New York, 1976.

Robert A. Freitas Jr.; "Xenobiology," *Analog* 101 (March 2, 1981):

Olaf Stapledon; *Star Maker,* Methuen, 1937. Reprinted, Penguin Books, Baltimore, Maryland, 1972.

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Lawrence Fine

PUBLISHING TIME

Enigmatic Science Fiction Magazine thanks you for the opportunity of examining the enclosed manuscript. We regret that we have no need for the story at this time.

This polite rejection could have been made necessary by the presence in your manuscript of any or all of a thousand problems common to first stories. Lack of a reasonably sized editorial staff makes it impossible for us to be more specific. Good luck.

Yours truly,

The Editor

Dear Sir,

Okay, so you are getting a personal response from *Enigmatic* this time. You can't seriously expect us to remember a story that was submitted over a year ago, but if your claims are true they are impressive.

My guess is that we rejected your manuscript as just another time travel story—one with an annoyingly detailed and technical description of the workings of the time machine. Frankly, we had always disliked time travel stories and considered them to be among the top three far-fetched and over-worked sub-genres. We do admit to a certain

If you can't lick 'em...

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embarrassment at the recent invention of a functional time machine, particularly one operating on principles so similar to those you took pains to outline in your story. Truth can be precisely as strange as fiction.

We agree with you that the government is being slow to appreciate the full positive and negative potentials of this new breakthrough. Since it was discovered accidentally and without government funding, it has been taking the authorities some time to decide on appropriate limits to production and use. At least, none have been sold commercially yet, and existing models are being guarded. You make a worthwhile point that once in the seat of a time machine, a thief would find it easy to make a getaway "in time." Still, maybe you are being a bit of an alarmist; nobody likes an alarmist, and readers are no exception.

We regret to point out that the piece is now unacceptable to our magazine for the very reason which you have eagerly brought to our attention: the science fiction elements of the story have been transformed into non-fictional background. We suggest that you try submitting your manuscript to a more conventional adventure magazine.

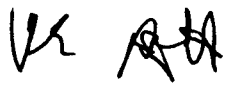
Yours truly,

Joe Syzygy
Editor of *Enigmatic Science Fiction Magazine*

Dear Sir:

We found the tale of your story's history quite interesting, which is why there is real typewriter ink on this page. The piece isn't bad, but the facts are already far out of date. Technology and politics of this sort advance far too fast, which is why we here at *Real Sweat Stories* prefer more timeless topics such as supermarket massacres, sabotage on fifty-story construction sites, and domestic torture. Thank you and feel free to contact us if you write anything along the lines which we have mentioned.

Truly yours,

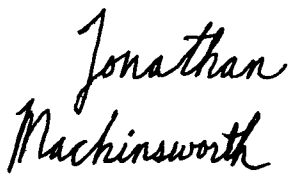


Jerry Guts
Editor of *Real Sweat*

Dear Sir:

We are pleased to inform you that we found your story very interesting and original. We would be happy to purchase it for use in the January 1892 issue of our magazine.

Sincerely yours,



Jonathan Machinsworth
Editor of *Gentleman's Eyebrow-Raising Tales*

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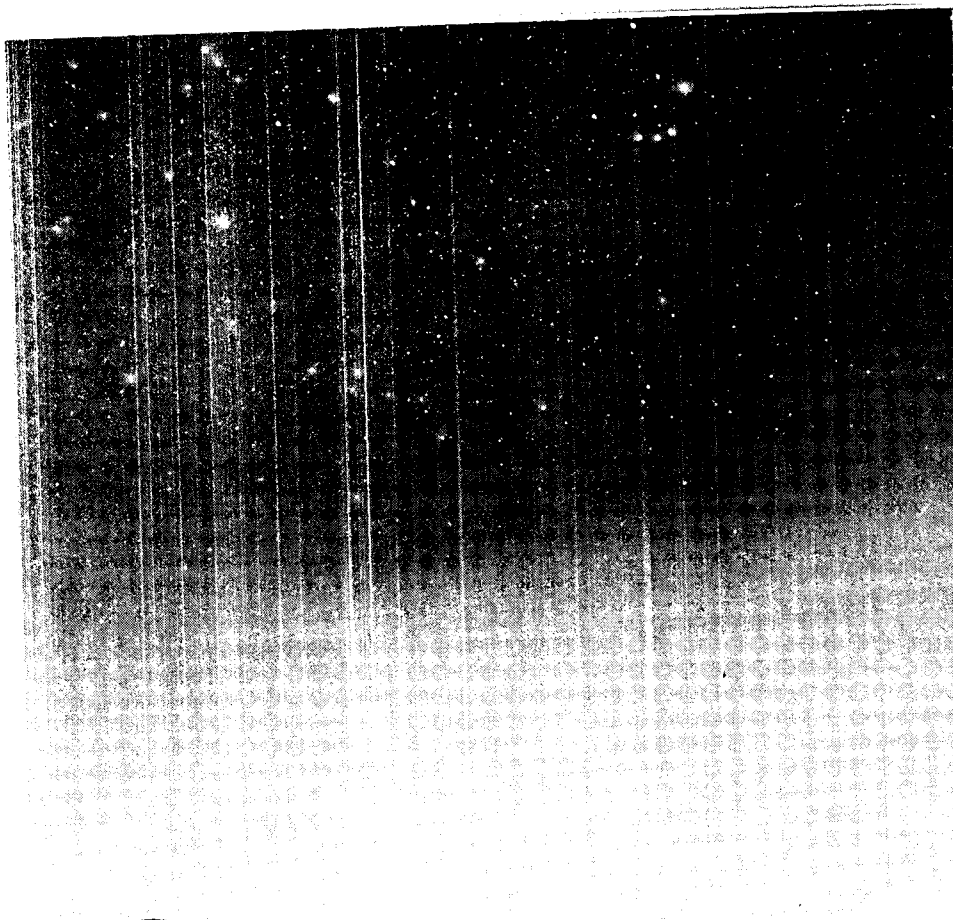
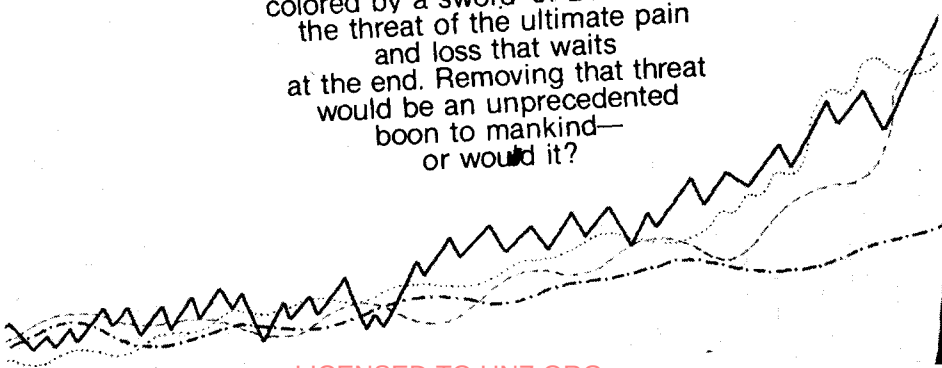


Joseph Green

GENTLE INTO THAT GOOD NIGHT

All life is
colored by a sword of Damocles:
the threat of the ultimate pain
and loss that waits
at the end. Removing that threat
would be an unprecedented
boon to mankind—
or would it?



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He came swimming slowly up from a long and intense immersion in the depths of concentration, as though emerging newborn from the primordial sea. There was sun-warmth on his skin, the smell of greenery in unfiltered air, the sound of human voices. . . . He stood blinking in the laboratory door he had just opened to the small enclosed court, where several employees were eating lunch at three concrete tables outside the cafeteria entrance. They seemed terribly young, just grown babies really, and this world without CRT screens and dancing green symbols still lacked full reality. . . .

But his need for human companionship was overwhelming. He had spent almost two weeks locked in symbiotic embrace with a giant computer, and through it, the extended family of its mechanical kin. With glucose leaking steadily into one vein and stimulants into another, with an electronic Cap that could almost read thought lying heavily on his balding gray head, he had riffled continuously through the accumulated biochemical knowledge of mankind, seeking a new relationship between known parts. And after he finally found it, a sudden revulsion against logic, efficiency, extreme order, came surging up from his subconscious, and he had to go seeking the addled thinking and undemanding acceptance of his human brethren.

He took a step out of the sacrosanct doorway, and one of three women at the tables looked up. He saw her turn and swiftly hush her five companions. Six pairs of eyes watched intently as he walked slowly toward them. They saw Dr. Anthony Esposito, great scientist and world benefactor, inventor of nepenthe—not the stooped, gaunt, tired old man who stared back at him out of mirrors. There was a mingling of quiet awe and restrained curiosity on their faces, with more than a touch of worship.

He took another deep breath of this air that had taste, odor . . . glanced up into an azure sky, barely flecked with high, small white clouds . . . a beautiful day in the physical universe. He was crossing the single open area at the heart of a huge manufacturing complex that covered thirty-six acres, surrounding his old laboratory like thick blue clay hiding a diamond. He had insisted they build no more than two stories high, and leave his weather-worn concrete block building standing alone, with some room on all sides. The design geniuses had done it, building a highly efficient plant with an unused area in what should have been its functioning heart.

Tony Esposito walked slowly across the small area of grass to the first table, feeling every one of his sixty-four years. A short, very pretty brunette hastily crowded against her companion to make room for him. There was an immediate readjustment of seating positions around the circular bench.

"What's good today?" Tony asked, smiling, trying to put the young woman at ease, as he carefully lowered his creaking bones to the bench.

She smiled back, a little timidly. "I had the quiche, Dr. Esposito." She had a pleasant voice, low and unexpectedly deep. And her brown eyes were large, with the fashionable upcurving hook on

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the outer ends of thick eyebrows. . . . "It was excellent; everything here is."

"I'll be happy to bring you some, sir," offered one of three apparently identical young men. No, that was unfair. They were individuals, dressed alike in lab smocks but separate human beings, each with an identity, a personality, a soul. . . . "Thank you," Tony said, accepting. He did not want the food, but he urgently needed *them*. It would be only a few minutes before some company executive came seeking him, alerted by the electronic eye they kept focussed on his laboratory door.

To Tony's surprise, he managed to finish his quiche and enjoy twenty minutes of pleasant conversation before management found him. It was Leon Bright himself who came, his short, stubby form moving with that animated gait that said this man's time is important, do not delay . . . the president of Transition was always in a hurry.

After the barest nod to the six junior employees, who were obviously trying to curry favor with the Chairman of the Board, Leon launched into the nonstop monolog with which he always greeted Tony when he emerged from seclusion.

Tony listened as they walked, nodding occasionally, knowing Leon would have already taken care of anything important. He was a figurehead chairman for administration, and wanted it that way. Leon actually ran this giant company, the first truly global enterprise. A Transition House within easy traveling distance of everyone in the world . . . deprived of all that affluence brings in life, still you may share a long last supper with the wealthiest before death . . . in the end there is true equality. The worst lie down with the best, for that final year that becomes a complete and much better second life.

"*Three* messages from one of my son's professors?" Tony suddenly interrupted the fast-flowing stream of words. They were entering Leon's palatial office suite. A small room inside was reserved for Tony, where the secretaries stacked the mail he might choose to answer.

"Yes, a woman named Constance Valvada, a statistics teacher at U of F. It's something about Aquinas, and she won't say what. I called her myself, said I'd let you know when you came out. Aqui called too, just yesterday; said it wasn't urgent when he learned you had the no-trespassing sign up. How did it go, incidentally? Get the final equations on that proposed new synthesis worked out?"

"Yes, the data is in the computer. I'll transfer it over to Big John for the engineers to pick through later." Leon and the other managers still liked to shove some of the tougher problems his way, though Transition had many bright young staffers who could have eventually solved them. Tony suspected they liked to keep him busy, as well as reassure him of his importance to the company. Still, these were only minor improvements, condensing eight steps to two while a hundred remained.

Leon escorted Tony across the thick russet carpet to his inconspicuous door, almost hidden behind a receptionist at her desk; then left him. Tony sat in his familiar worn swivel chair for a moment, then sighed and picked up the first handful of mail. He skimmed through it briefly, put it back down, and reached

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for his message list. Ms. Valvada's three calls were at the top.

What had his lovable but completely irresponsible son been up to now? Twenty-five, and still having trouble in college! By that age he had been doing post-doctoral studies in artificial enzyme reactions. Aqui was majoring in the far easier field of business administration, and only going for a master's. His mother had spoiled him, made everything so easy he could charm his way through life, the world your oyster without effort, no opening knife needed.

Tony punched out Ms. Valvada's number on his private line; no secretary or anyone else could tap into that one. He reached the administrative office of the dean of the business school. The receptionist recognized him immediately, and he saw her eyes widen on the tiny screen. "Oh, Dr. Esposito! I'm supposed to hold you on the line if you call, and get Professor Valvada to the nearest visiphone. Will you hold for just a minute? I won't be long."

Tony nodded, and the screen went blank. But in less than a minute it lit up again with a woman's face; perhaps forty, red-haired, freckled, a little extra flesh over strong bones. "Dr. Esposito, thank you for calling. The matter is urgent, or I wouldn't . . . it's about Aqui, and also . . . I wonder if we could meet, perhaps tomorrow? I have some figures I think will interest you. At least you *should* see them, I believe. Have you talked with Aqui lately?"

On learning he had not, she said, "Then I'll let him tell you about his decision. Please call back if you agree to the meeting." She gave him a brief, strained smile, and clicked off.

If Aqui had failed a tough subject and changed majors *again* . . . He punched out his son's number with steady fingers. Moody and temperamental he might be, but Aqui was at heart a good lad. He had no internal drive and was short on self-discipline, but had managed his life adequately since Tony stopped trying to pick his career for him. He had never caused his long-divorced parents any real problems.

The dark, curly hair and tanned complexion were the same, but there was a new pensiveness in the quirky smile, a look of disillusionment about the handsome young face. "Thanks for calling, Dad. Glad you came out, because it's your last chance to say goodby. I'm taking Transition a little early—like about Tuesday. Thought you'd want to know. Didn't call to have you talk me out of it, either. Wouldn't have bothered if my decision wasn't firm. Tried to talk to the mother, but she entered Transition a week ago, it seems—didn't bother calling first."

Tony felt a sudden chill. His ex-wife already gone, and now Aqui? Entering Transition at twenty-five, with all his adult life still before him? That was a gross perversion of his contribution to suffering humanity, nothing but a gentler form of suicide. Transition was for the aged, the incurably ill, the already dying—an end to losing fights against enduring pain, dark terror, fear of the great unknown. *Oh death, where is thy sting?* He had plucked away death's stinger and his name was forever immortal . . . but now his only child sought this easier slide into oblivion without ever having fully lived!

"Aqui, listen to me! You're an adult;

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no one can stop you taking Transition if you want it. But at least give me a chance to talk you out of it. If you feel hurt because your mother slid off without even saying good-by, then don't do the same to me!"

Aqui had to grin. "Guess you caught me there, revered elder. Okay, we have three days. How about dinner at Marchand's tomorrow, on you. Eight o'clock?"

Tony nodded, and Aqui broke the connection. Tony immediately called Ms. Valvada back and asked if she could be at his townhouse for dinner at eight. She could.

Tony glanced at his stack of important mail, then got up and walked out of the office. By the time he reached the heliport on the roof his two quietly efficient guards had joined him; Smith and McGuffin, this shift. They rode his private aircar through bright Florida sunshine to the heliport on his townhouse—a string of connected apartments occupied only by employees of Transition, carefully selected for loyalty and stability by Leon Bright. In minutes he was relaxing in a hot bath, in a small complex on the ground floor so well shielded only a direct hit by a megabomb could demolish it.

Strange, that many people should want to kill the man generally acknowledged as having done more to relieve human misery than any other person in history. But they existed: relatives who said their loved ones would have remained alive longer if not for the lure of Transition, simple psychoes who wanted to kill someone famous, even religious fanatics. The last were the worst of all. Most claimed that Transition was evil and unnatural, a perversion of God's will that people should suffer in life, and die in pain . . . all for the good of some supposed immortal essence that would then live happily ever after.

There was time for a nap before dinner, and Tony took it. He had long ago stopped giving menu suggestions to his single servant, Jesús Istaban. He only needed to know there would be a guest for dinner tonight.

Tony awoke feeling less tired. He mixed himself a weak bourbon and water—Jesús was in the kitchen, doing his culinary magic—and relaxed with it, while running through the headlines of video stories that had been recorded for him during the past two weeks. The world had changed very little—or at least that which the newshawks felt worth reporting had remained the same. Murder, mayhem and riot, thefts both private and public, revolutions and economic excesses . . . he refused to follow a single story.

He always felt drained, more emotionally than physically, after a stint doing computer simulations in his lab. Thirty years ago he had first devoted all his talent and energy to a single major problem, hand-operating the primitive computers available then. After sixteen months he emerged from seclusion to announce the greatest breakthrough in biochemistry since the discovery of the double helix. There had been no further work of comparable importance—but he had solved many remaining smaller problems, and made further worthwhile contributions in sidelines to his original triumph.

Promptly at eight McGuffin escorted

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Constance Valvada into his sitting room. She was prettier than she had seemed on visiphone, with a lush figure that might seem a little heavy nude, but was lovely in evening pants. She carried a small attache case, which she let Tony take and put away.

Women had never played an important part in Tony's life. He had simply not had the time for them. As a young man he had used prostitutes to relieve the worst of the aching need. Those were quick, simple transactions, with no time-consuming after-effects. He was married at age thirty-five, to a woman nine years younger, and Aquinas had been born when he was thirty-nine. The marriage had lasted six more years. It had been at least ten years now since he shared sex with a woman—and that had probably been for the last time.

Still, he had not satisfied his present need for human companionship, and this was an attractive and intelligent woman. When Constance tried to discuss her reason for insisting on seeing him, he gently hushed her, and asked that it wait until later.

The dinner guest was a woman of good appetite. She cleaned her plate, to the pleased gratification of Jesús. Tony ate his usual small portions of everything. Afterwards, relaxing in the snug library with a glass of good Hungarian wine, he finally let her get to what she felt was important.

"Dr. Esposito—Tony—let me say first that I have more than a teacher's interest in Aqui. We've been lovers almost a year now, since my one and only husband chose Transition at the age of forty-five. I think the relationship has been good for both of us—though perhaps I've gotten more from Aqui than he from me—who knows? Regardless—I don't want to lose the second man who has meant so much to me to Transition, and Aqui's too young to be thinking that way in any case."

"I quite agree. I'm having dinner with Aqui tomorrow. *I fully intend* to talk him out of it."

She smiled, a slightly sour twist of the lips. "Good luck; I've tried and tried. Now he won't even discuss the subject. Says he was fitted and made by his nature and society for Transition, and it's time to go. All because of a stupid failure on his last automated statistics test. In a class *I taught him!* Can you guess how that makes me feel?"

The desperation lying in wait behind the heavy cheekbones was in the open now, turning her face into a strained mask, rigid and breakable. Tony felt a surge of sympathetic concern. She must know that Aqui, totally unlike his namesake, was no scholar. His deeply religious mother had insisted on naming him after a saint, and Aquinas was the only one Tony could tolerate. She had never understood why. Over the years the irony of that choice had become apparent, when Aqui displayed all the interest in his studies of a computer musician in Gregorian chants.

"You've probably seen more of Aqui during the past year than I have. Was it that failed test alone? Or did it just add the final kilo to the cart?"

"Oh, the final kilo, I think. He simply doesn't want to *try* anymore, as though it's all just too much work. He's come to feel that real life hasn't that much to offer. Aqui is willing to give up fifty years of healthy striving for a

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guaranteed wonderful life by electronic simulation—no effort required." She hesitated, her face clouded by uncertainty, then added, "Perhaps he's right, and I'm wrong in wanting to keep him with me. I know this: if he goes, I won't be far behind him. I'm tired of fighting it. Under the Cap, you don't lose your lovers."

"Not unless your program calls for that as a worthwhile life experience," Tony said, his thoughts elsewhere. He still did not believe he would have any real difficulty talking Aqui out of this latest mad idea.

"But that was only part of what I wanted to see you about, Tony. If I may have my case?" When it was brought to her she extracted some papers. "I'm a statistician by profession, so believe me when I say these facts have been checked and rechecked, and the trends are irrefutable. Here are the final results in a summary sheet, based on figures from Transition Houses chosen at random from every state on Earth. It was easy to do, since you require even the franchised ones to publish a full set of statistics every year."

Tony went over the summary with care. He was not good with general statistics, but these were easy enough to understand. After the first few years of operation, when the early Houses had functioned primarily as intended, the average age of those entering had steadily declined, while the health indicators moved rapidly toward the good. Now almost half the people entering were under fifty, and a goodly number, like Aquinas, were in their twenties. Less than one out of thirty was terminally ill—their intended primary class of customers—and even most of the elderly people were reasonably healthy.

Constance was again wearing that unhappy smile. "It's hard to resist the lure of a perfect life. A full sixty years of existence crammed into one, and so closely simulated your false memories are as real as the true ones if you are awakened. People who've been called back before the process becomes irreversible have undergone the same psychological changes they would have if they had been through true life experiences. Transition Houses are *too* good, Tony. They are taking away the average person's desire to live."

Deeply shaken, unable to refute the unyielding statistics now blurring before his eyes, Tony looked away. "I never thought—*no one* thought—this could happen. The possibility was raised early in the program, and discounted. We accepted the will to live as a biological constant for healthy individuals, part of the nature of the life process itself."

"A perfectly reasonable assumption of a prevailing cultural attitude, Tony. Unfortunately, it now seems certain that cultural conditioning has again overcome biology. The quality that makes us unique from the other animals, the ability of a reasoning mind to overcome instinctual drives, is working against us."

"Constance, I'm sorry, I . . . need to think about this. Do you mind?"

"No, of course not." She rose to her feet. "I didn't want to cause you any personal distress. Used the intended way, Transition can be the greatest gift society has to offer its aged and dying. But it's also in those statistics that every time to date a government has tried to

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take the right to cheap and easy Transition away, for whatever reason—that government fell."

Constance turned around at the door, where Jesús had appeared as if by magic. "Aqui isn't going to change his mind." Her voice was low, and filled with pain. Unshed tears were shining in her eyes, but she would not cry until out of Tony's sight. "I hope I meet someone I like as much under the Cap next week."

For perhaps the first time in his easy-going life Aquinas had reached a truly serious decision, and he was not to be moved. "This lobster"—gesturing at the Utah-grown remnants of his favorite dish "—raised in a totally artificial environment, but tastes just like its wild and very scarce cousins. In your Transition programs, just like every other good thing known. So real you'd think the taste was still in your mouth, if they happened to awaken you during dinner. Oh, I've checked it out. Talked to three separate people who've come back. All swear they had to be *told* what was in their programs. Only way they could separate the simulated experiences from real ones. Had to be reoriented before attending to whatever urgent business had caused the court to issue the wake-up order."

"And are they going back under?" asked Tony.

Aquinas looked surprised. "Astute you should ask. Yes, all three of 'em. And for two, their problems have been solved. Both about forty, terminal from one of the rarer cancers. Left instructions for wake-up if a cure was found in time, and it was. Now they don't care. Liked life better under the Cap."

It wasn't astuteness on Tony's part. Constance had worked up a set of figures on the choices people made after being awakened. Many doubtful ones insisted on being recalled after a week or a month, to be certain they wanted to continue Transition. After about six months for a healthy person, less for the aged or seriously ill, nepenthe sensitization of the brain became irreversible; to awaken was to die shortly thereafter. The number of such recalls was also dropping rapidly, as word spread and people stopped worrying. The final figure in that section listed the number of people who returned to a normal life after awakening. It was so small as to be a statistical oddity.

Tony was trying hard to be rational and avoid acting like an authoritarian parent. Aqui was not usually very logical in his behavior, but it was a quirk of his personality that he responded well to reasoned argument. "Explain one thing for me, Aqui. Why would you, or anyone else, go under the Cap before living out your natural span? Since you can have another whole life in a year, why not wait until you are—oh, say seventy—and *then* enjoy your second life? Why limit yourself to just one?"

Aqui's expression changed. It was as if a shadow had settled over his face, extinguishing the animation and aliveness. He looked at his father, and then away. "And what makes you think *this* life has so much to offer for those of us not born geniuses?"

Tony sat back, surprised and hurt. He had not known his unambitious son resented his success and acclaim.

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Tony looked at his two guards—Dieter and Stanley, this shift—who were sitting at the next table, quietly eating their dinners. Both men were alert, their busy eyes only occasionally glancing down at the food. They were a pair of normal, healthy human beings, who undoubtedly intended to go under the Cap when they were old and ill, or terminal for other reasons. Even though their second lives were certain to be better than the ones they now lived—bringing them everything from the thrills of adventure to the joys of education, from travel to frequent and delightful sex, the best of any desired human experience—they still planned to live out their natural spans first.

But the statistics compiled by Constance said that an unacceptably high number of people did not like real life that much; that they preferred the thoroughly controlled, stimulating and pleasurable environment under the Cap.

Tony broke a long silence. "Aqui, I think I need to get back to my lab, where I can do some uninterrupted thinking. If you're not going in until Tuesday, will you promise me we can at least get together once more first? If for nothing else, to say good-by."

Aqui looked up, the shadow gone, a little embarrassed and shamefaced. "Sure, Dad. Whatever you say."

Tony slept very poorly that night, despite the good food and several glasses of wine. He awoke early, dressed and ate a light breakfast, then called for his aircar. The small night shift was still at work when he arrived before seven o'clock. He had to get the night watchman to let him into the executive offices; he had no key.

When the three secretaries arrived just before nine, Tony had almost finished dictating answers to his mail. They were surprised to see him come out of his little-used office. When he asked for Leon, he learned the president would be away for the day, making some financial agreements in New York. He didn't bother to ask for details.

When the lab door closed behind Tony, the two guards now free to wander so long as they stayed close, he felt ready to do what he did best here alone—concentrate on a problem.

And that was the personal secret of his success, which he shared with no one—not Leon Bright, nor Aquinas, nor even his former wife. He was no genius—far from it. If he had any unusual ability, it was simply that quality of dogged concentration that enabled him to immerse himself in a given area of thought and stay there, digging deeper and deeper, until eventually he reached an answer—or conceded it was beyond him.

Usually, when the resolution finally appeared, it was something perfectly obvious, an answer he should have seen the moment he put his mind to the problem. He always felt terribly stupid at such times, quite certain a better biochemist would have gone straight to the heart of the matter and resolved it within minutes—not days or weeks, as with himself.

He was not unappreciative of the many accolades heaped on him over the past thirty years. He had accepted them gracefully. But it was the business decisions he had made—to keep nepenthe a trade secret rather than patent it, to establish Transition as a non-profit in-

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ternational corporation, to franchise Houses throughout the world—that had made him a major historical figure. And that was simply showing a good understanding of human psychology, not scientific genius. He was still the guiding hand behind Transition, the policy-setter—and Leon Bright, at least, knew that.

Even the original discovery of nepenthe . . . he had been working on something else, a not unusual situation for a breakthrough event, when the accident happened. And that was what it had been: a lucky accident. The computer he was using had juxtaposed data from a long-term reaction he was running on norepinephrine with that obtained earlier by another chemist, a woman he knew casually who was studying the breakdown products of the enkephalin peptides and several other neurotransmitters in the brain. The possibility had simply jumped out at him from their combined results. If the sensitivity of the individual receptors in the outer cortex could be greatly increased, so that minute, carefully controlled currents could cause selected nerves to fire in very small groups, then it became practical to stimulate them in a manner which approximated real inputs.

That had been the germ of nepenthe, and it had taken him only sixteen months from then to produce the first few precious drops. The Cap already existed; it needed refining, but he had gotten some electronics experts to do that, requiring only minor advancements in the state of the art.

Both the public and the science media credited him with knowing exactly what the results would be from using the Cap on someone whose brain had been sensitized by nepenthe. Actually, he had had no more idea than anyone else. What went on deep inside the brain—the secondary associations, the syntheses, the time-sense distortion that turned minutes into hours, while retaining a perfect sense of reality—he had watched the first results appear with the same amazed delight as his coworkers.

No, it was the applications of his discovery that were important, not the original flash of an idea. He was more nearly the Henry Ford of biochemistry than one of its true geniuses, like Pauling, or Watson and Crick, or Chakrabarty. If the guiding hand of genius had touched him, it had been when he decided to keep nepenthe a trade secret, and added a buffer to the formula which changed nothing, but made the ingredients harder to identify—and after six more weeks of frenzied work, still another meaningless but highly complex buffer. The final fluid had successfully resisted analysis now for almost thirty years. Tony Esposito alone knew the actual composition of the base of nepenthe.

He glanced once more through the statistics Constance had so easily compiled. (Had this been done before, and simply ignored by the media?) The projection figures seemed to rise and sink into his brain, to circle endlessly in a familiar dance, whose steps he learned anew each time he had to solve a major problem . . . within another thirty years, before 2060, fully half the world would be under the Cap, and it would take the time and attention of twenty percent of the remaining population just to care for the living, and cremate the dead. . . .

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Tony sank deeper into the problem.

No one questioned the Chairman of the Board when he appeared on the midnight shift and quietly ordered the computer technician operating Big John to let him have the chair. The tech watched Tony produce his coded personal key and insert it into a slot in the console face that had not been used in her young lifetime.

"Take a break," Tony said, looking up to the diminutive oriental girl hovering over his shoulder. "Come back in an hour."

"Yes, sir. Please enter into the log that you took over for me."

Tony nodded, and signed into the accountability log. The girl vanished. The oldest and physically largest Transition computer had a small room to itself, though there were others, with their operators, just outside the door.

Working slowly, Tony punched out a simple combination he had long ago memorized. Without the key in place, those same instructions would have resulted in the immediate wiping of one particular short tape. So would an attempt to reach it by any other means whatsoever, including physical disassembly of Big John.

There was an almost human sighing, followed by a faint physical shuddering felt through the floor, as though long unused gears were rustily grinding, deep within Big John's secured interior—and seconds later a small reel of tape popped into a rectangular holder extending from the console's base.

Tony picked up the tape, removed his private key, and turned the computer off. Big John had only one primary function, to which he devoted most of his capacity. He controlled the first basic steps in producing nepenthe, in a completely automated fashion. The base chemicals went into huge hoppers, were ingested, heated, mixed, cooled, reheated, reprocessed, the new mixtures reheated and cooled, then remixed . . . the final product could not be broken into its component parts without losing all record of the processing steps. And only Tony Esposito knew that two of its ingredients were unnecessary anyway.

The liquid produced by Big John was so potent that it constituted less than a thousandth part of the commercial fluid known as nepenthe. The remainder of the thirty-six-acre plant produced vast quantities of the final product, enough for a world—but it all began with Big John.

Lost in thought, Tony took the worn old reel of tape to his laboratory.

"How did you find me?" asked Tony. The drug was swiftly taking effect, and his voice was weak.

Leon Bright shrugged. "Told the police you had been kidnapped. That got it on national media, and one of the attendants here recognized you. No trick to that. Question is, why did you want to end Transition by dismantling Big John?"

Tony was silent for a moment. He had hoped to die in peace and quiet, and let his motives be analyzed by others. Surely the necessity of what he had done was so obvious it needed no explanation.

"I left a set of statistics on my desk in your suite, Leon. Our choice seems

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clear to me. Either we dispense with nepenthe and Transition, or the human species goes down the drain. You can't restrict it to the old and ill, as I intended. If it's available, people *will* have it."

"I saw the statistics. I've seen a dozen others just like them. Nothing new there."

Tony forced himself to sit up, awakening enough to gather his wits and some remaining strength. Leon was looking around the small, clean, and pleasantly decorated room. Tony realized he was searching for the Cap. "This is one of the rooms reserved for the few who don't want Transition, Leon. Just a clean and easy death. I've already had my shot. *I'll* be slipping away in a few minutes."

Leon was not prone to emotional outbursts, but there was a look of restrained grief—and not a little anger—when he turned back to Tony. "*Why*, man? Why take away the gift? Why send people back to the pain and horror and terror of death? You were the greatest benefactor—" He stopped in frustration. There were no adequate words.

"We made a fundamental mistake, Leon. Me first, and then all the rest of the decision-makers in the world. Do you think I don't realize what I'm doing? That I like it? The one animal on Earth we've never really understood is ourselves. Now we know. Never offer unlimited candy to a baby. It will eat itself sick."

Tony lay back, exhausted by the small effort of speaking. He could not say all that he felt. That he did not want to die at all, but knew he must. How it seemed a triumph of irony that the man who had invented Transition could not partake of it for his own ending. But it would take at least four months, in a man his age, for nepenthe to stimulate the cortex past the point where he could be awakened without dying. The authorities would simply have gotten a court order; and by fair means or foul, once he was awake they would have forced him to recreate the seminal tape for Big John.

"Have you thought about Transition? The million Houses around the world? Me?"

"A good chemical manufacturer can always find something else to produce. And competent people like yourself always find jobs. As for the pain, and the fear of death . . . this Transition House offers euthanasia, as most do. The fear is natural, and humanity lived with it for millions of years before we changed that. They can learn to do so again. No, the only thing I'm taking away is the candy, the second life that's better than the real one. I wouldn't change my mind even if I could. And I can't, because I destroyed the Big John tape. Now please go. I want to die in peace."

"Then so be it, Tony. It's been a long association." Leon Bright reached for one of Tony's hands where it lay flaccid and limp on the prone man's chest, squeezed it briefly, and turned and left.

Tony lay quietly, comfortably, starting to drift . . . this wasn't so bad . . . but then the realization that he was *dying!* came rushing up from some deep subterreanean well and flowed over his consciousness like some horrible fog. Dying . . . no more good food, the pleasures of conversation, the exciting moments of discovery, the high points which made all the drudgery

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seem worthwhile . . . the fear was deep, primitive, strong . . . he fought it back, tried to contain the sudden loathing . . . but the fog filled every vessel and cell of his being, a dark miasma, a noisome phlegm . . . he felt utter despair, and surrendered to it, embraced it as a friend, as something to cling to in this total aloneness. . . .

Aquinas . . . the face of his beloved son floated before his inner vision. He wondered if the younger man would be jarred out of his desire for Transition, when he heard of his father's passing . . . probably not . . . but there were millions of others behind him, and for them there would be no easy choice . . . life as it is, or a final ending . . . live as best you can, in the real world . . . not so bad a place, for those who strive to make it better . . . *wish I could have been a more warm and loving human being . . . devoted more time to my wife and child . . .* too much of me went into my work . . . *if I had the chance to do it over again. . . .*

Leon Bright yanked open several drawers in the battered old metal desk in the laboratory before he found the computer key. Tony had not bothered to destroy it, which made matters simpler. He hurried to the little room containing Big John. It was empty, its lights off, its power supply quiet. Working slowly but with sure hands, he restored power, brought the computer to operational readiness, and inserted Tony's key.

From his wearall suit pocket Leon removed a small tape reel, inserted it in the special rectangular holder, and pressed buttons. The tape vanished into the mechanical heart of Big John. Seconds later it was in place on a spindle, and the green "ready" light blinked on.

Leon had made that tape many years ago, when Tony insisted on this restricted set-up for absolute trade security. He had gone into the sacred precincts of the laboratory—he was the only other person the locking system would admit—found the computer key, assumed charge of Big John long enough to remove the tape and copy it, and forced the tech on duty to falsify the log. That tape and four well-hidden duplicates had been his private security plan, formulated long ago for just such an eventuality as Tony losing his mind.

Which he obviously had.

Leon did not believe for one minute that the entire human species was going to commit slow suicide. This "early out" fad among the young would pass, as had a thousand before it, and the million that would come after. The candy was poisoned; the healthy would soon reject it. He was as convinced of this as of the fact that he had earned his very high income, and the good things it brought that made this present life so appealing.

Leon pressed the "program activation" button. ■

● The reasonable man adapts himself to the world; the unreasonable one persists in trying to adapt the world to himself. Therefore all progress depends on the unreasonable man.

G.B. SHAW

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Jay Kay Klein's

BIOLOG

Joseph Green

Joseph L. Green wrote science fiction stories steadily for half his life before selling his first at age thirty. It was published in an English magazine, and he has continued being especially popular overseas. All but his latest novel (so far) have been translated and published in German. A first *Analog* appearance came in March, 1967, with a science fact article on Surveyor, the moon lander. February, 1971, saw his first *Analog* story, written around one of John Campbell's classic themes, that of an expert working on a problem that prior experience and preconceived notion makes difficult to solve.

Joe was born and raised in Florida, where he now resides while working as a contract writer and team supervisor for NASA. Science fiction is written on weekends. A former "missile bum," he travelled and worked all over the country where his talents were needed. While participating in the Apollo launchings, Joe played host to the science fiction writers who gathered for each space shot. A framed certificate signed by writers from Anderson to Zelazny attests to Joe's popularity as a party-thrower.

Basically self-educated, he has an A.A. degree and 30 college hours of science and math. His academic interests lie in astronomy, psychology, sociology, anthropology, and general science—a roster similar to that of most other science fiction writers. Earlier jobs also sound familiar: well driller, papermill hand, laboratory technician, welder, construction millwright, production planner, engineer, technical writer, public affairs science writer, and a miscellany of others.

Joe thinks that human beings are at their best when hacking away at the endless frontier of knowledge, and that humans may not be perfectable, but they can become better. Science may not have all the answers to human problems and what makes the universe tick, but it's the best available system for the search. He views science fiction as entertainment with an unusual ability to stimulate the mind at the same time. The recent giant increase in published science fiction has resulted in large amounts of very poor material, he feels. In contrast, the best science fiction is a handmaiden to real science, and in the exploration of alternative futures helps prepare people for marvelous new discoveries.

Joe has most recently been sweating out the first novel in an intended trilogy about a unique alien, spoked-wheel in shape with a life process based on silicon chemistry. ■

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The Alternate View

More About Those Books

G. Harry Stine

A great deal of reader response came as a result of "The Most Valuable Books in the World" (Analog, 5 January 1981, pp. 95-97). I anticipated 95 percent of the response, which said, to paraphrase the many letters, "You've listed books concerned only with technology! You have erred in not including *any* books on the most important subject of all: how to help people get along with one another, to form governments, to interact, etc."

To recap what was said in "The Most Important Books in the World," it was a game to which Robert A. Heinlein introduced me thirty years ago. The premise: You are allowed to take six books—no more—with you to permit you to continue or rebuild civilization if (a) the thermonuclear balloon goes up and you duck into your hole, or (b) you embark upon a multi-generation interstellar journey to colonize a new planet with no hope of either communications with or return to the home planet.

My six books were the *Handbook of Chemistry and Physics* ("The Chemical Rubber Handbook"), *Mechanical Engineer's Handbook* ("Mark's Manual"), Mellor's *Modern Inorganic Chemistry*, the *Merck Manual of Diagnosis and Therapy*, and the two-volume *The Way Things Work, an Illustrated Encyclopedia of Technology*.

I opted for books on science and technology because they offered the best opportunity for us to provide food, shelter, clothing, energy, sanitation, *and defense against others who, not having the presence of mind to stash such books, would attempt to take these things away*. This last is not paranoia; in a world of scarcity (which is what our planet is except in isolated locations) the easiest way to get something is to take it away from somebody else who has it.

My correspondents wanted to take along books that would inform and instruct the survivors about how to get along with one another, to form organizations, to establish governments—in short, to create social institutions.

The six books I chose tell how to deal with the Universe. They tell about stresses in wooden beams. They tell how to make chemistry work to provide materials that are desired. They tell how to keep from reinventing the wheel. The data in these books is solid, leading to repeatable results. There is little room for opinion in engineering; either the bridge withstands the load or it fails.

Of all the letters I received about the "Six Books Game," only two of my correspondents suggested alternate documents.

One suggestion was to include *Gray's Anatomy*. Not bad. Thank you. I'm certainly thinking about that one.

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The other was that we should specifically include a copy of the Constitution of the United States of America, including the Bill of Rights and all subsequent Amendments.

Think about that one. Are you *sure?* In the first place, it's less than 200 years old and is therefore among the youngest of all documents establishing a social institution. I may be accused of being un-American, but frankly we're not even certain that the Constitution *works* yet. In the U.S.A. we've had to expend a lot of effort to make it work. We fought one war over it, and conflicts centered on it occupy the time and effort of the lawyers and the courts right up to this instant. As a document giving valid information on how to get along with one another, it works marginally in the nation that created it and not at all in many other places where it has been used as the model for other national constitutions. None of these has lasted. Example in point: The Constitution of the Republic of Czechoslovakia was adopted in 1920 and was formalized in Independence Hall, Philadelphia, Pennsylvania; it lasted less than twenty years. Many Central and South American countries based their constitutions upon the U.S.A. model; how well has it worked for them?

Face it: the Constitution of the U.S.A. works for the people of the United States, but only because of a very high level of education and a continual effort to *make* it work. How long it will continue to work depends on how well we are educated and how hard we work at it. Judging from some of the letters from my critics, few of them have studied American history, let alone world history. Our Constitution won't work for everybody in the world. Even our neighbors, the Canadians and the Mexicans, have their own unique governmental forms, none of which embrace the U.S. Constitution.

There is one form of representative government that antedates the American experiment: the British constitution, with its parliamentary form of government presided over by a monarch. One big problem: We cannot stash the British constitution with our other emergency books for the simple reason that it is unwritten.

Some readers berated me for failing to include the Bible (King James version, I would suspect, since it's the common version in the U.S.A.) as a document for telling people how to get along with one another. At the great risk of being attacked by the Moral Majority and all Right-Thinking People, why shouldn't we include the Koran, the Torah, the Book of Mormon, the holy books of the Hindus, the Buddhists, the Taoists, or even those of the American Indians that have been written down? If you're going to save the Christian Bible, you'd better figure on saving the others, too.

At further risk of the wrath of all Right-Thinking People, may I point out that the Bible is probably one of the bloodiest, most violent books ever published? And, if you will carefully read the Song of Solomon, you will find that it's pornographic as well. Insofar as being a book with instructions on getting along with one another, the Bible has had several millennia to do its job . . . and it hasn't done it very well at all. Some of the bloodiest wars in

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history have been fought because of it. Some of the cruelest tortures in history have been carried out in its name. Don't give the excuse that it isn't the Bible that's at fault, but the people who interpreted the Bible. People do things to people; books do not. The Bible hasn't succeeded in getting people to get along with one another on a worldwide basis, or even in small villages for that matter.

I have very sad news for those readers who believed that I deliberately left out of my list any book having to do with human relationships, improving human relationships, creating benevolent social institutions, etc.:

There is no book on that general subject that has ever been written and that works to the level of reliability of the six books I listed.

Perhaps that's the reason why those correspondents who objected to my neglect of human relationships books *did not list a single book* in that area save the U.S. Constitution and the Christian Bible (New and Old Testaments).

Perhaps also it is a realization that we have not been very successful in the overall establishment of civilization if we can list only books having to do with technology but not with basic human relations. This stems from historian Will Durant's basic definition of civilization:

"Civilization is social order promoting cultural creation. Four elements constitute it: economic provision, political organization, moral traditions, and the pursuit of knowledge and the arts. It begins where chaos and insecurity end. For when fear is overcome, curiosity and constructiveness are free, and man passes by natural impulse towards the understanding and embellishment of life."

My six books relate to economic provision and the pursuit of knowledge. We are sadly lacking in the same sort of books having to do with moral traditions and political organization because of the extremely wide variety of both existing on Planet Earth. If we attempt to list how-to books relating to moral traditions and political organization, we must needs show our provincialism and cultural bias.

One lovely letter from a lady reader, however, caught this spirit of the Game of Six Books. She didn't agree with me and she admitted she didn't know exactly why. But she said it made her realize that she had to work out her own list that was longer than six books and get as many good books into her home as possible for the sake of her children. She unconsciously recognized what civilization is all about, because Will Durant concludes his discussion of civilization that opens his epic "The Story of Civilization" series as follows:

"Civilizations are the generations of the racial soul. As family-rearing, and then writing, bound the generations together, handing down the lore of the dying to the young, so print and commerce and a thousand ways of communication may bind the civilizations together, and preserve for future cultures all that is of value for them in our own. Let us, before we die, gather up our heritage, and offer it to our children."

Our "Six Books Game" was not a simple game after all. It led to a discussion of What This Is All About. ■

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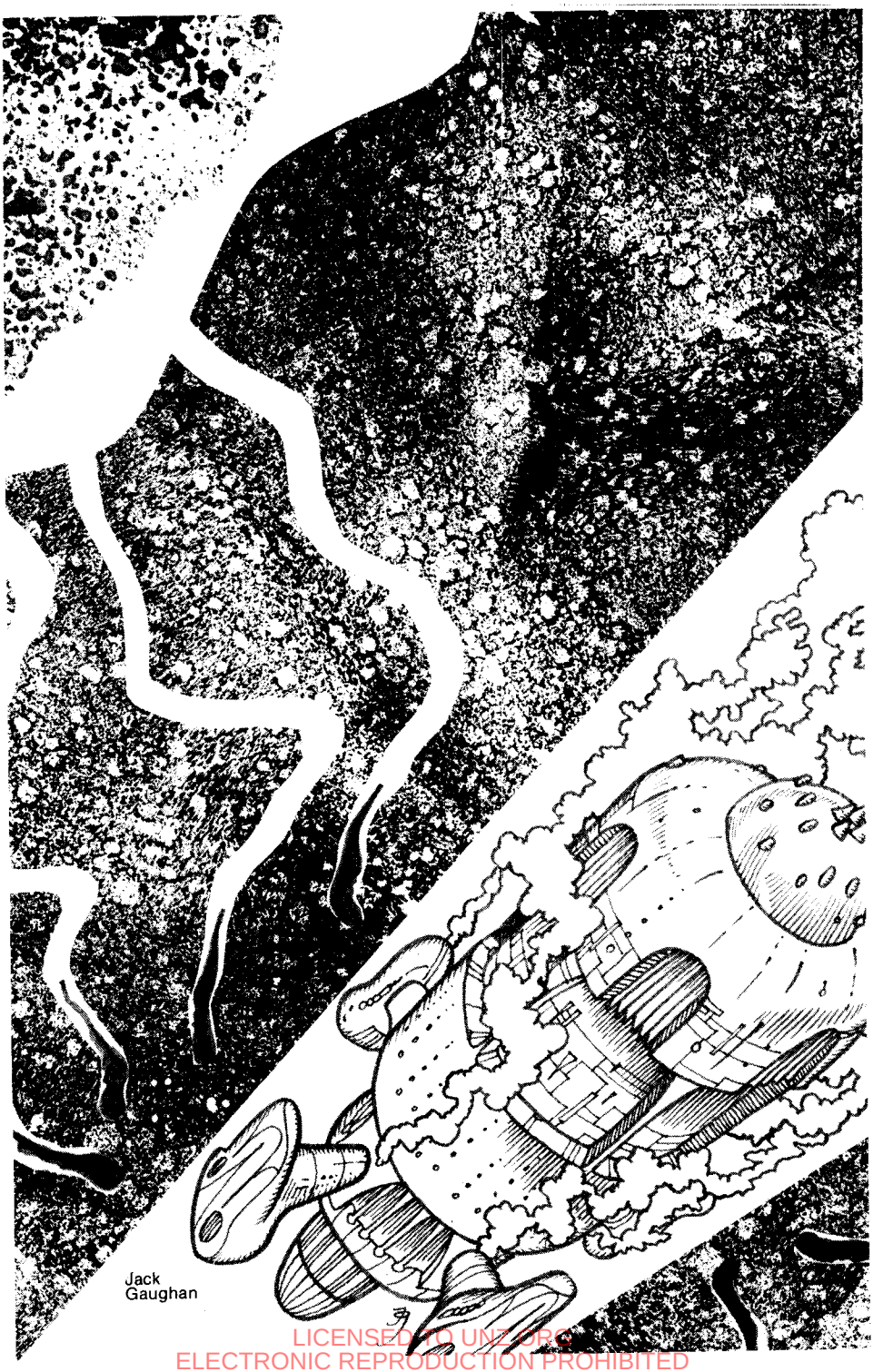

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Ian Stewart

DEEP JOAT

The nature of a problem depends on who's describing it. And if you want a certain solution, it's wise to specify very precisely.

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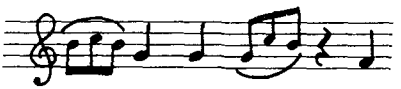
His name might be loosely rendered in musical notation, thus:

or, with little extra loss of accuracy, transcribed phonetically as Tappitadat-datdappita [pause] bam; or its literal sense might be translated as Wiseworld-cleavingswarmguide. Nor is "name" an adequate description, for a name is an arbitrary personal symbol, and this was anything but arbitrary: it was a role-attributive call-sign, affirming his position relative to his swarmfellows. And, since the swarm was a strict hierarchy, the simple word "king" is perhaps a closer approximation than any yet mentioned. Yet the literal translation has its own merits, for he was indeed wise in the ways of his kind, and the swarm had prospered under his guidance. His swarmfellows adored him, bending obediently to his will. And where he led, they followed, from the crackling cold of world-above to the softsticky warmth of world-beneath, their own call-signs chiming joyous descant to his resonant masterpattern.

And yet . . . something was missing: one dimension of their joy was inverted into sadness. There was a flaw in the harmonic texture, a gap that should be filled by the randomly syncopating trill of the small-ones—but was not, for there were no small-ones. Worldchange had come, and now world-above was too-cold, world-beneath too crushing. To these now-inhospitable zones the small-ones came, as ever . . . and died; which was a terrible wrongness and a wrenching inversion of joy.

And Wiseworldcleavingswarmguide sensed, though he could not know—for his mind was of the present-rooted-in-the-past, holding no imprint-model of that-which-may-come-to-be—he sensed that the swarm, too, would diminish and die.

But for now, the dimensions of joy that remained outnumbered those of pain: progression, and nourishment, and togetherness. And he flexed his snout-ring, and the world flowed through and around him, and he sang his flawed happiness and was almost satisfied by it.

A solo spaceflight is a bad way to forget a woman. Even when your vessel is a brand-new Vishunti KKB with iso-spin-complementation halo-shift; even when the ship is the *Lindilu* and the woman Alaya de Flore Strooghn. Because Alaya had given the yacht to Billy the Joat as a parting gift—and Billy had first met her under the alias of Lindilu Glynde. The luxury space-yacht was not so lavish a gift, considering that the joat had restored Alaya's ownership of the vacation world Bahamba Bright. And that had been his undoing, for planetary management and the freewheeling life of a joat make a mix as palatable as vodka and antifreeze.

And so the professional Jack-Of-All-Trades went on his way, a sadder but not noticeably wiser man. And after three weeks alternately drifting along on standby and phasehopping whither he cared not, he decided that the cure wasn't working—but that working might be the cure. He wiped away his beard,

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put on a clean shirt, and made a freewave call to Joze Palgandra, newly promoted to a SpaDe post on Aphélix. Palgandra was away on business, but the joat was in luck: the SpaDe official was due back in ten hours. During which time the joat fidgeted and fretted and won eleven straight games of Ragnarok with the ship's computer set on "grandmaster" class, devising in the process a novel refutation of the Batavian Ripper opening, currently in vogue.

The joat was in a foul mood.

Finally the freewave warbled and Palgandra's ursine features appeared.

"What do *you* want?" he snarled—and a snarl is very effective, coming from a Grynth.

"A job," said the joat.

Palgandra had not expected this particular reply, and his hairy lower jaw dropped a millimetre, exposing the base of a set of remarkably sharp teeth. "A *job?* I always have to twist your arm through three full turns to get you to do *anything*. I assume this is another of those stupid tricks of yours."

The joat explained.

"Ah," said the Grynth. You wouldn't expect a creature that weighs in at some four hundred pounds and looks like a cross between a grizzly bear, an orangutan, and a bat to have much emotional sensitivity; but of the four races that make up the Quaternity, Grynth and human are the closest. Palgandra had a tinge of romanticism—an allegation which he would have denied vehemently had it been made to his face, though afterwards he would have regretted the impulse, and visited the victim in hospital.

"I see, Jarneyvore," he said. "You need some work to take your mind off these unfortunate personal circumstances." He snorted in sympathy. "No doubt I shall be able to oblige. Where are you?"

"My God," said the Joat. "I haven't the foggiest idea. Hang on, and I'll ask Navigation." He fiddled with his controls. "Well, well! Waldorf Sector."

"Ah. Certainly there will be something going on *there*."

Waldorf Sector held one of the largest concentrations of multiplanetary corporations in the Quaternity.

"Yes," said the joat. "But you'll never pin it on them." Palgandra ignored him, and made a call to Files. The joat tried vainly to read his facial expressions as the Grynth flipped through his electronic casebook. He must have found something, for he suddenly displayed a broad, toothy grin. On a Grynth, this resembles the Jaws of Death.

"There are several problems that might yield to your—*snort!*—talents, but one in particular appeals to me. Have you heard of Sear's Planet?"

"Naturally. Originally Zzyllmyllillizzyn—I *think* that's right—an uninhabited planetoid under Femmish control. Smallish, low-gravity; renamed by the Femm when they orbiformed it; now one of the fastest growing business centers there is. All the multiplanetaries are flocking to buy real estate and put up offices. The trouble is, it's mostly water, so they have to build mile-high towers on a few tiny islands. Personally, I'd have expected them to find somewhere with a bit more *room* . . . no, hang on, of course it's the *exclusivity* thing. Adds prestige, pushes up the price . . . my, but those Femm are

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clever psychologists! One junkworld turned into a multitrillion-kroon asset overnight!" The joat shook his head in wonderment. "So what's with Sear's Planet?"

"Persistent rumors," said Palgandra.

"Benign, or malignant?" asked the joat.

"Eh?"

"What *sort* of rumors?"

"I'm coming to that." Palgandra scratched his huge button nose with his thumb-claw. "It would appear that those mile-high tower blocks are beginning to sink into the ground."

There was silence for a few seconds. "Yes, that would do it," said the joat, almost absently. "A pretty piece of panicking in high places."

"The markets are . . . disturbed," said the Grynth.

"That's what I said. And you want me to find out why this subsidence is taking place?"

"Not quite," said Palgandra. "I want you to stop it."

Wyllam (Billy the Joat) Jarneyvore cast a last, loving eye over the sleek lines of the *Lindilu* and checked that the doors to its capacious and empty cargo-bay were properly shut. He slipped a wristband remote—giving access to the ship's main controls from any distance up to twenty thousand miles—over his left hand, exited by the stern airlock, and strolled nonchalantly along a translucent flexitube to the waiting shuttle. Twenty-five minutes later the vessel was bobbing gently in the harbour waters of Shum'n-al-Qyf, the largest of Sear's Planet's seventy-eight islands.

On Sear's Planet, land was too precious to waste on spaceports. From the harbor's edge, homeoglass and plaxycrete walls climbed relentlessly skywards, into and beyond the thin cloud-cover. It looked like a Giant's Causeway built by a demented giant who hadn't known when to stop.

No wonder the buildings are sinking into the ground, thought Billy. *They must be overstressing the crust all the way down to the Mohorovičić discontinuity—assuming Sear's Planet has one.* But the answer couldn't really be that trite: the Femm were highly able engineers.

On his way to Immigration the joat was stopped by a fat Grynth in SpaDe uniform, who asked to see his ID. He rummaged in his cape and produced the small rectangle, out of which a miniature Wyllam Jarneyvore stared mournfully at the universe. Below the hologram, personal data were inscribed in allegedly tamperproof ink.

"Just a routine check, sir," said the Grynth. "If you would be so kind as to accompany me, it will only take a few minutes." He pointed to an unmarked doorway nearby. "Just through there, Mr. Jarneyvore."

The joat followed him through the door, across a large open area, to an elevator. "Floor 7," said the Grynth. Billy, who was nearest to the control-panel, touched the pad for him; the elevator rose.

"Where are we going?" he asked. The Grynth smiled, but said nothing. There was a faint hissing, and a sudden smell, like acetone. The joat tried to turn his head, and found it would not respond. Smiling more broadly now, the

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Grynth caught his paralyzed body before it toppled.

A second Grynth was waiting as the elevator reached the seventh floor. He helped the first to drag the joat into a dimly lit bay containing several dozen plain gray barrels and a small electric cart. They tipped him headfirst into one of the barrels, filled it to the brim with dried bean-husks from another, screwed the top on, and loaded the lot on to the cart. Two more barrels were added for realism.

Ten minutes later the three barrels were rolled into a battered tub-truck and whisked away through the ground floor of what, on close inspection, was more like a single vast building than a conglomeration of individual ones. The streets of Shum'n-al-Qyf were a rabbit warren.

Though paralysed, the joat was still conscious, and aware of his surroundings. Nor was he especially impressed by them: there are many modes of travel more comfortable than being crammed head-down in a barrel of bean-husks in a tub-truck with faulty suspension. He vowed dire vengeance on whoever was responsible.

SpaDe has an office on Shum'n-al-Qyf, on the corner of 873rd Street and the Avenue of the Humigants. It is on the 476th floor. The Space Department would have preferred a penthouse suite on the 777th floor, but these are increasingly stringent times.

To this office, by high-speed elevator and pneumatube, the two Grynths conveyed the angry person of Billy the Joat. They tipped him out unceremoniously onto a hard floor and carried him along a corridor to the door of Herdmonitor Brunyg-ap-Wyfft, the ranking SpaDe official. The fat one knocked, and they entered.

"Agents Makil and Kreen reporting with suspect as ordered sir!"

The herdmonitor gave an embarrassed nod. "Oh dear. You haven't been exactly gentle with him, have you?"

"No, sir. We had no orders to be."

"Of course. However, it seems that, in the unfortunate necessity of haste, certain niceties have been overlooked. In particular, this gentleman is not a suspected drug-smuggler, as you may have believed."

"Oh."

"In fact, since he has been aware of all that is happening to him, including the present conversation, we shall have to tender humble apologies for his treatment. You see, he is working for us."

It will take more than apologies, the joat vowed.

"This will be a trifle awkward, I fear," the herdmonitor added.

It will indeed, thought Billy smugly.

"Pardon my temerity, sir," said Makil. "If I may offer a suggestion?" There was a short, whispered conversation, too faint for the joat to follow.

"An excellent idea, Makil," said Brunyg-ap-Wyfft. "Irregular, but justified in this case, I feel. It will save unnecessary inconvenience."

Compensation! Oodles of beautiful kroon! The joat began to assess a negotiable figure.

"When exactly did you pick Mr. Jarneyvore up, Makil?"

"0947, sir."

"Ah . . . so the appropriate dose would be for seventeen minutes."

Dose?

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"Yes, sir, provided I administer the amnesiax now. Shall I proceed?"

Amnesiax? You stinking bastards, that's a memory-wipe drug! I'll get even for this if it's the last—

"Go ahead, Makil." The joat felt a tingling coldness. . . .

Billy the Joat was lying on something soft. He remembered leaving the shuttle and heading for Immigration, but there the memories seemed to stop. His head ached, and there was something small and hard pressing against his shoulder blade. He wriggled uncomfortably and sat up.

"Ah, Mr. Jarneyvore, at last you are awake." The joat turned his head. An angular Barasshanti with scrupulously manicured hooves was sitting opposite—a herdmonitor, judging by his markings. SpaDe insignia were also prominent. The room was sumptuously furnished: Billy himself was sitting on a lush blue velvet couch. "My name," said the Barasshanti official, "is Brunyg-ap-Wyfft. These gentlemen are agents Makil and Kreen. I am the ranking SpaDe administrator on Sear's Planet. We welcome you."

"Oog," said Billy. "What happened? How did I get here? The last I can remember is—"

"For reasons I shall explain in a moment," said the herdmonitor smoothly, "we were forced to make some changes in our plans. It was necessary to bypass the normal immigration channels. We are unfortunately obliged, in such circumstances, to administer a harmless memory-wipe. To preserve security, you understand."

"Oh."

"I am unable to reveal further details, but I *do* assure you that it involved no discomfort. On that, you have my word." The herdmonitor turned a stony eye towards the two agents. "You may go."

Billy wasn't satisfied. When officialdom goes out of its way to assure you of something, you can bet your most cherished bodily parts that it has ulterior motives. "What were the reasons?"

"We received word—too late for comfort—that your life might be endangered if your identity became known. A certain Chief of Constabulary, Otis Pigge, sent an urgent freewave call. We were able to get agents to you just in time."

"My life in danger? Who could possibly want to kill me? I've never done any harm to anybody!"

"Pigge mentioned a woman called"—he picked up a card—"Sherryl Eton."

"Oh, her. Yes."

"She has reason to bear a grudge?"

"Well, I once diddled her out of some highly profitable trade in organic chemicals. But the Etonians *float* in money. Surely she wouldn't react that strongly?"

"Mr. Jarneyvore, you are incredibly naive. You thwarted the ambitions of a woman who, since birth, had been accustomed to the satisfaction of every whim. How do you think she feels?"

"Annoyed," said the joat.

"Hell-bent on revenge," said Brunyg. "You need a new identity, Mr. Jarneyvore. You see, Sherryl Eton is here, on Sear's World, at this very minute. She heads a consortium developing the islands."

"Damn. When I took this job, no-

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body mentioned that the Etonians would be after my blood. It gets more impossible every minute!''

''If you say so. To my mind, it was impossible to begin with. You're *sure* you wish to continue?''

''Yes,'' said the joat doggedly. ''A joat never turns his back on a challenge.''

''You're a brave man, Mr. Jarneyvore. And a foolhardy one.'' The joat didn't really listen: there was *still* a hard lump down the back of his shirt. He poked an exploratory hand down his collar.

''Now, we must prepare your new identity—''

''Before you do that,'' said Billy, ''perhaps you could explain to me what *this* is.'' He held out a wrinkled green object, covered in tiny prickles.

Brunyg peered at it. ''It appears,'' he said, ''to be a bean-husk. They are imported from Dumdingo III as a staple dietary item—''

''How did it get there?''

''Mr. Jarneyvore: *do you or do you not want us to stop you getting killed?''*

''I suppose so,'' said the joat tiredly. The way he felt, he wasn't sure whether his life held as much interest as a bean-husk. ''Get on with the performance, Herdmonitor Brunyg.''

It took less than two hours to provide Wyllam Jarneyvore with a new face, a new name, and documentation to match. He was now Rodrik Duxas, an expert tectonicist from Brugglugg IV, with a diploma in subduction studies from the prestigious Mittelburg Institute. In this guise, he was ready to begin his investigations.

Palgandra had talked of ''rumors.'' Brunyg could go further: the subsidence was a fact—but one to be concealed from the public at large, at least until the holovix crews caught on. Those in the know were few—and highly placed, except for the numerous Femm construction workers. In their usual inscrutable fashion, the Femm weren't talking in any case.

Except to Rodrik Duxas, of course.

''We can now gonfirm,'' the Femmish technician said thickly, ''that signs of dangerous subsidence have been detegted in some areas. Notably in the most recently developed parts of Gurvaly Grue.'' Curvaly Crue was a sickle-shaped island near the equator. The Femm found k's and g's hard to pronounce, and tended to get them mixed up. Apart from that, their speech was precise and monotonously regular.

''How serious?'' asked the joat.

''At its most egstreme: one blog sang nine floors.''

''A mere bagatelle,'' said the joat flippantly. ''A drop in the ocean—say! Is the sea undermining the land?''

''No, Mr. Dugsas. All *obvious* potential gauzes have been chegged. Our tegnicians have made egstensive stress analyses. Before gonstrugtion gommences each island undercoes egstensive tegtonig restrugturink, to halt, divert, or balance the subgrustal flows that generate earthguages and eruptions. We sing shafts right down to macma level.'' *Macma? Oh, magma!* ''We would not icnore anythink as simple as seepage.''

''I will need to inspect the site personally,'' said the joat. ''As soon as possible.''

''I have arranged for a sgeeter to pig

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you up early tomorrow," said the Femm. "If you wish to brink any baccage or egwipment with you, please ensure that it is placed in suitable gontainers."

"I'll have it grated up at once," said the joat.

Tectonic restructuring is expensive, and best done once and for all: it was Femm policy to develop the islands of Sear's Planet one at a time. On Curvaly Crue they were about a quarter of the way through the job, with extensive workings both above and below ground affecting half of the island. The other half appeared to be still in its original state—but that was an illusion, as the joat discovered.

His skeeter whirred in from the northeast, across the undeveloped terrain. Looking down, all he could see was a dull, streaky brown landscape. He commented on it.

"Yes," said the Femm pilot. "Dead *wysshhiij*."

"I beg your pardon?"

"Wysshhiij were the main logal plants before Zzyllmyllillizzyn—Sear's Planet—was orbiformed. Before, it was approgzimately one third of its present distance from the sun, in an egcentrig orbit. Now it is within the gomfortable temperature range, in a cirgular orbit without seasonal variations. That is much better."

"Sounds dull to me," said the joat.

"Yes, Mr. Dugsas, but you are human. We Femm prefer rekular behavior. An unavoidable side effegt was that the wysshhiij died of the gold. They preferred the original atmosphere of superheated steam."

"I'm surprised it was orbiformed at all, then," said the joat. "QuatCent doesn't often give permission for orbiforming if native lifeforms are destroyed. Still, these are only plants. Were there any animals?"

"None. It was too hot. There were no fish either: in fagt there were no oceans then."

"I see what you meant when you said 'humid'. So there was no chance whatever of sentient life. Now there QuatCent really *would* blow its top!"

"I do not understand the idiom."

"Brook no interference."

"That is much clearer."

"Glad I'm not a wysshhiij," said Billy.

Now, ahead, the construction site loomed: a dark mass, glittering in the morning sunlight, flanked by half-finished plaxycrete columns, a monstrous caricature of a fakir squatting on a bed of nails. The skeeter veered southwards, where the ground was heavily scarred, bright orange clay, pancake-flat in comparison. It whirred in to land beside a sprawling complex of low, temporary structures, beside which an enormous isosteel pylon reared skywards.

The joat began to cheer up. The slimy mud, and its orange color, reminded him of his home on Grover's World.

The project overseer, like all the technicians, was a Femm; his name was Ymillyn Jiydyrrill. He explained to the joat the various steps being taken to stabilize the planetary crust against the considerable stresses that the buildings would produce. Eventually "Rodrik Duxas" was satisfied.

"There has to be some additional, unexpected factor," he said. "Some-

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thing outside the usual range of phenomena."

"Indeed, since our gomputations inglude all known phenomena. We have tagen a statistigally sicnifigant sample of gores; but we geep ketting anomalous changes of flow-pattern in the subgrustal rogs, destroying the basis of our galgulations. Yet, we gan find nothink unusual about the rogs linink the main shaft." He pointed out of the window at the pylon.

"I wondered what that was," said the joat.

"It coes down vertigally for a distance of forty-three thousand feet. At the bottom the temperature approaches 900° Gelvin. Half a mile further, the rogs bekin to melt, and a mile below the end of the shaft is the molten gore of the planet. That is an approgzimation, of gorse: the gore is egstremely irrekular in shape, and there are poggets of macma distributed throughout the lower levels of the grust. Many of these are at egstremely high pressures, mudge higher than that of the surrounding rogs, because of the presence of superheated casses. It is a gomplicated planet for tegtonig engineerink, Mr. Dugsas."

It sounded like it, the joat thought. "Why choose it, then? Why not find something more suitable?"

"It is perfegtly suitable, Mr. Dugsas. The Femm do not fear gomplexity."

No, but this planet's surprised you, hasn't it?

"There is a one-man mobile laboratory. It runs up and down the shaft on four independent sets of frigtion bearinks."

"Aha!" declared the joat. "A mohomobile!"

"I bek your pardon?" said the overseer, proving yet again that the Femm lack a sense of humor. "The mobile laboratory is gompletely self-gontained. It is pressure-resistant, heatproof, and propelled by its own motors. The frigtion-bearinks crip the walls of the shaft even when, as is sometimes the gase, these begome deformed. It is provided with an egstensive range of ancillary facilities." The joat marvelled at a creature that could say "ancillary facilities" but couldn't manage a simple "grip." "It has often been found advantageous to diregt the tegtonig restrugturink usink an on-site observer. In partigular the danger of an unintentional eruption is crately reduced."

"Oh," said the joat. "What do you do if an eruption occurs?"

"We have efficient warnink devices, and this buildink can be evaguated using sgeeters gept in readiness for that purpose. The gonstrugtion worg is of gorse gept well away from the agtive areas of tegtonig restrugturink. But a blow-out—I believe that is your term for it—is egstremely rare."

"What about the poor mug in the mohomobile?"

"If I interpret the gwestion gorregtly: rekrettably there egsist no emergency procedures for the observer in the mobile laboratory. But he will be honored by his brood."

"Oh."

"Perhaps you wish to use the mobile laboratory yourself, to magne a full inspegtion? I gan easily arrange—"

"I doubt that will be necessary," said Billy hastily. "It should be possible to solve the mystery from the surface." *I'd rather avoid the hot-seat.* "Though I'm

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sure it would be a rewarding experience. Now, I will need data on—" A concealed buzzer cut him short.

"Pardon me," said the Femm. "I must receive a message. I will return shortly." He left the room and walked along the corridor to Communications.

It was a personal call from one of his major financiers. She was anxious that the outside expert, Mr. Duxas the tectonicist, should be afforded every cooperation. The overseer gave her a crisp report on the current position.

". . . and he has asged for some data. I will see to that at once, when I have ascertained his precise needs."

"Will he be making a shaft descent?"

"He things he gan solve the problem from the surface."

"But we have *already* studied the problem from the surface, Jiydyrrill." The Femm overseer forebore to point out that they had also studied it from the shaft. "Mr. Duxas must get to the bottom of the matter—*literally*. He really *should* be given the opportunity to make a close-up inspection himself.

"I'm sure you could persuade him that that would be a wise step."

"Mr. Dugsas seemed convinced it would not be necessary—"

"I don't believe he can do the job properly from the surface, Jiydyrrill! As Executive Director for the Gannimex Consortium—which you may recall is financing this project—I *insist* that he see for himself."

Even to Femm, money talks. In fact, it talks more persuasively than most other things in the Quaternity. "Certainly, Diregtor," said the overseer. "I will ensure that Mr. Dugsas takes that opportunity."

"Good. But I don't want him to feel pressured into it. It would be best not to reveal to him the consortium's concern. It might sap his confidence. No mention at all, Jiydyrrill."

"Of gorse, Diregtor." The caller hung up.

Excellent, the director thought. Duxas the tectonicist was on his way to magma level. Only, of course, he *wasn't* Duxas. . . . She made another call. Kreen had been most helpful: the SpaDe agent deserved a handsome reward. Unfortunately, he now knew too much; he would have to be eliminated. A tiresome business.

She instructed one of her own agents accordingly, and replaced the receiver. Now to more appealing business.

Jarneyvore, you bastard, I've got you this time, thought Sherryl Eton.

The mobile laboratory slid into Hell like a baby mudlark on its belly in a sumphole, its four independent motors purring gently as it sank into the shaft at three and a half miles per hour. It was a beautiful piece of precision engineering, crammed with equipment for every contingency and stocked with enough food, air, and water to last a week underground if need be.

How did I get into this hole? The joat still hadn't worked it out. But Jiydyrrill had been so politely insistent that it had been well-nigh impossible to refuse. Billy was still convinced that it ought to be possible to solve the problem "up top"—by which he meant not only the literal interpretation, but the use of the little gray cells inside his skull; but curiosity, once more, had got the better of prudence.

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Joats aren't cats, he told himself firmly.

Anyway, what self-respecting joat could refuse a free trip into the bowels of a planetoid, or a chance to drive such a magnificent machine as the mohom-obile?

Jiydyrrill, personally, had instructed him in its operation. He had explained the many safety features, including remote override from the surface. He hadn't really needed to: the joat's familiarity with technology was such that most of the equipment held no secrets.

There was a bank of screens that showed the shaft walls. He could obtain instant analyses of mineral content, heat flow, elastic stress, crystal dislocation topology, plastic deformation parameters, pressure, and density. These could be superimposed as false-color overlays. Using NMR detectors, neutrino registers, and quark diffractometers, he could map the subcrustal flows and pressures for miles around, and display any section he wished; or exhibit them in 3-D with a holographic synthesizer.

Two separate screens showed views up and down the shaft. At thirty-nine thousand feet, not much was visible either way: soon it would be time to stop.

He had seen absolutely nothing that might help explain the subsidence. To pass the time, he began to sing:

"Oh, the road to Hell is a slippery well,

"But the climb to the stars is a pain in the—"

A sound like a thunderclap cut him short. There was a grinding noise. Three more thunderclaps followed, almost together. The laboratory vibrated wildly, shuddered, and stopped dead. There was silence.

The joat grabbed the microphone.

"Topside, topside! We have an emergency!"

"This is topside," said a Femmish voice. "We have monitor gonfirmation. Your motors have gut out, and the laboratory is stationary. We will have a more detailed readout in a few moments. Gan you desgribe the cirgumstances?"

"There were sounds like four separate explosions, within a few seconds of each other. The motors cut out at once."

"Gurious: they are all independent. An elegtrigal fault, perhaps? I will inform Overseer Jiydyrrill. Gan you mague a visual inspegtion? It will save time."

Billy the joat rummaged in the tool-locker and descended into the lower recesses of the laboratory. One sniff told the tale, but he made sure anyway. It took less than a minute to eliminate the possibility of an electrical fault: by then he had found the remains of a time-delay detonator. The characteristic smell of dynoplax had made the diagnosis obvious from the start.

A bomb.

Four bombs. He didn't even look at the other three units.

He scrambled back aloft. "Hello topside! The motors have been sabotaged! Damaged beyond repair by dynoplax grenades. Can you—"

A female voice interrupted him. "I know." It was a *familiar* voice. The screen flickered, and topside came in on visual. "I put them there," said Sherryl Eton. "I do *so* dislike people

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who make nuisances of themselves. Don't you?'' She smiled—it was not a nice smile.

''Goodbye, Jarneyvore.''

The screen went blank, and the mohomobile was plunged into darkness.

Brunyg-ap-Wyfft's 'phone buzzed.

''Herdmonitor: this is Ymillyn Jiydyrrill, project overseer on Gurvaly Grue. There has been a terrible agcident involvink your Mr. Dugsas. He is unharmed—but he is trapped, eight miles undercround.''

''What?''

The Femm explained.

''How do you propose to get him out?'' said Brunyg. ''Lower a rope?''

''Herdmonitor, even if we good find rope or gable gapable of bearink the strain of its own weight, the temperature at that depth is crater than the meltink-point of lead. No known material gan bear sudge a stress at sudge temperatures. The laboratory is egstremely massive, and Mr. Dugsas good not survive lonk enough in a goolsuit: it would overheat before he was halfway up. Not even garbon-filament gable would worg. The laboratory is the only one that we have, and it would tague too lonk to build a machine gapable of descendink the sheer walls of the shaft. Mr. Dugsas will run out of air in cigs and a half days.''

''Can't you lower him more air?''

''Some—if we gan lay hands on eight miles of garbon-filament gable and suitable gontainers. But the gooling-system of the laboratory has insufficient heatsings for mudge above a week. I have stretched my granium till it greeks, but I gan find no answer.''

''Byshtuth!'' The herdmonitor used a very rude word in the local dialect. ''I will do what I can. Inform me if you require any assistance of any kind.''

''Yes, Herdmonitor. There is one other think.''

''Yes?''

''We have lost gommunigation with the laboratory. We do not know why.''

Brunyg put down the 'phone. At the other end, so did Jiydyrrill. Sherryl Eton smiled at him. ''You are handling this emergency very well, Overseer.''

''As you please, Diregtor. But the whole think baffles me. First the motors, now the gommunigations. And with all gontagt lost, we gannot even trace cirguits in search of an elegtrigal fault.''

''Frustrating.''

''Very. If only we good establish the gauze.''

Ignorance, thought Sherryl Eton, *is bliss. I shall see to it that a state of bliss is maintained.*

''He did not kiv any indigation when you spogue to him, Diregtor? It is unfortunate that you did not regord the gonversation.''

''I'm sorry, Jiydyrrill. I'm not very familiar with this type of communicator. No, he didn't say much of interest, at all.''

Wiseworldcleavingswarmguide flexed his muscular snout-ring and revelled in the joy of being, the joy of life and progression, the joy of nourishment. As his snout-ring flexed, the world cracked and crumbled into delicious nuggets, to be sucked into his belly and digested by the chemical fires that leeched their energy to render it up for the enrichment

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of his restless spirit: life-life-*life*, abundant and glorious! He tapped at the world with his ventral callus, and in a moment the returning chorus welled all around him: *swarmfellows-swarmfellows-swarmfellows-swarmfellows-here-here-here-here-herehereererere*—as the images overlapped and jangled against each other. *How wonderful is the world, for to eat is to travel, to feed is to progress; the means and the end are one.*

And yet, also: *the world is a wrongness, for where are the trills in the swarmchorus? Where are the smallones?*

The thoughts were sadness, and confusion—for how could the world be both wonder and wrongness? He tapped again, and the chiming reply all but drowned the distorted echo from a dark patch of not-world directly ahead of him, and his distracted mind failed to discern the trace that remained. Wiseworldcleavingswarmguide flexed his snout-ring again, to take an even bigger bite out of the world and further increase his happiness . . . and fell out of the world into a soft, silent darkness. Something struck his braincase a heavy blow, and even the darkness departed.

"What the Hell is that?" yelled Billy the Joat, as the mobile laboratory resounded to a tremendous thud directly over his head.

The emergency generators had come on as soon as Sherryl Eton had cut the power connections: to the joat this made it a childish gesture. Unless it was a side effect of the loss of communications, which was anything but childish. He switched on the up-shaft camera, but the screen was black. Were the searchlights on? Yes. Wait: isn't there a patch of light at the very corner of the screen? There is—and it's *pulsating*.

Strange.

Well . . . there's only one way to find out. On with the coolsuit and out through the hatch in the roof. See if anything is out there.

He began to climb into the cumbersome garments.

In SpaDe's office, the 'phone buzzed. Brunyg-ap-Wyfft leaned towards it. Sherryl Eton's face shimmered into existence.

"Herdmonitor Brunyg: I have had an idea concerning Mr. Duxas."

"Can he be saved?"

"Possibly. There is a new model of the mobile laboratory under construction on Brinsley Wain, in Herriot Sector. It *may* be in an advanced enough state to use. If so, I hope that the Gannimex Consortium can persude the manufacturers to phasehop it over to Sear's Planet. We will then assemble it at the top of the shaft and attempt a rescue."

"That's the first good news I've heard today!" said Brunyg, feeling the mental stresses evaporate. "But won't it be expensive? I'll have an awful job balancing SpaDe's budget!"

"The important thing, Brunyg, is the safety of Mr. Duxas. The Etonians will bear the cost. I shall supervise the rescue personally."

"Director Eton: You have my admiration. It is remarkably good of you to go to all this trouble."

"Not at all," said Sherryl Eton. "In a way, I feel responsible." She cut the connection. *Most satisfactory. If I am in charge, I can head off any other rescue ideas, and ensure that the rescue*

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vehicle gets there just too late. And I can be in it, to remove any traces of the original sabotage. Meanwhile, I get credit for my public-spiritedness. Nobody would believe I'd spend that much money on a cover-up. But what they don't realize is that I'd spend every kroon I have to get even with that little quimp Jarneyvore! And . . . *conspicuous expenditure is a way of life to an Etonian!*

The joat squinted into the searchlights. Something was out there, all right. It was lying across the camera lens. And it was alive.

But what *was* it? And how had it *got* there?

It resembled a large slug, or, more charitably, a seal. It was a dingy grey, eyeless, with a gaping mouth and a curious hump on its—back? Stomach?

He looked up the shaft. The creature must have fallen from a crumbling opening that loomed as a dark smudge in the searchlight beam.

No animals on Sear's Planet?

Think again.

The joat had no idea how to profit from the unexpected turn of events—but a basic rule of survival is to pursue whichever avenues are open. And this was the only one.

He touched the creature gingerly. He could sense nothing through the coolsuit, but the animal was *hot*—the palm-sensors said so. At this depth, it pretty much had to be.

He recalled a large, insulated oven in the laboratory, with a reinforced glass door: it was designed for the analysis of large samples of rock. But the creature was in the wrong place for the sample-scoop to reach it. He picked the beast up in his arms. Despite the low gravity, it was heavy; but the suit's servos would cope. He carried it to the hatch and lowered it inside.

With the beast safely in the oven, he extinguished several minor fires that had been started by its body-heat (the coolsuit was gimmicked to avoid such an effect itself), extracted himself from the suit, and began an examination of his prize. Its skin—*was* it a skin?—was an overlapping array of tiny plates. He bounced a pencil beam of ultrasound off it: the material was astonishingly hard, more so than diamond. The mouth was surrounded by a powerful ring of—bone? Whatever it was, it was even harder . . . and articulated, to expand and contract, and rotate from side to side in a small arc.

A drill.

A burrowing device.

An animal designed to live deep underground, chewing the rock and disgorging the remains behind it, extracting energy as it went.

It was hardly surprising that the planetary survey had missed them. And, of course, their travels through the rock would keep creating new connections between pockets of magma. Differential pressures would do the rest; an observer would see only an inexplicable change in the flow: the creatures, and their tunnels, were below the resolving power of the instruments. You won't spot woodworm with the naked eye from a hundred yards away—but you'll see the roof fall in, all the same.

It was probably a good job his communications were cut. He would have been tempted to inform the Femm. With

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Sherryl Eton at the helm, the likely result would be genocide.

The creature—he had mentally dubbed it a mohomole—stirred fitfully. The joat watched and did nothing.

Wiseworldcleavingswarmguide regained consciousness in some kind of horrible not-world. Yet there were sounds. Strange sounds. Frightening sounds. He began to tap his callus frantically.

The noise boomed round the room, amplified by the oven acting as a sound box: dippita*dap*dap, dippita*dap*dap. Billy watched as the mohomole writhed and twisted, flapping its belly against the oven floor. Dippita*dap*dap, dippita*dap*-dap! The sounds repeated. The joat leaned closer. They repeated *exactly*.

There must be some purpose to them.

Language?

Oh, come now. Animals, yes, but sentient creatures—still, it was possible, however unlikely.

What next? If he didn't do something quickly, the mohomole might wake up to the fact that the oven wall was a good deal softer than rock. Then it would probably eat its way through the laboratory floor and fall the rest of the way down the shaft. It wouldn't do the mohomole, or the laboratory, much good. Billy rapped with his knuckles on the oven door.

Wiseworldcleavingswarmguide was perplexed. Tappida*tap*tap was nothing like the expected reply, which was dippidittitbamdappa, repeated three times: *scatter-scatter-scatter!* Instead, *this* reply sounded like an aged female with a foreign accent, replying with the same fear-call that he had sent out: *Danger!* It was flat and thin and *wrong* too—and it was *close*. Too close, and *that* was wrong.

And yet, the female was making speech. This was a powerful and terrible event, a significant event. But signifying *what?* Wiseworldcleavingswarmguide began to communicate again, in a calmer and more measured voice. The joat's ears pricked up. *Those* weren't random sounds.

He rigged a recorder to take down the mohomole's tapping, and to play it back with a two-minute delay. With luck, that would intrigue the beast enough to prevent it eating a hole in the oven. The joat had urgent work to do, and the mohomole had to stay around until it was completed. The laboratory had a DK43 computer: good enough to take a translator program. The Xenology Institute had a highly effective one, running to some 5080 program lines. It wasn't in the laboratory's library, but the joat, who had an eidetic memory, had memorized the lot, years before. He fed the whole thing into the DK43 in four hours flat, with a short break every hour, during which he reassured himself that the mohomole was still in the oven. It was, though its patience was sorely tried by the stupidity of the male which seemed to have replaced the foreign female: he appeared not to have an original idea in his head. Fortunately for the joat, Wiseworldcleavingswarmguide was sufficiently awed not to try to escape. Billy had not noticed a deep gouge in the side of the oven where the mohomole had hoped for a light snack, but found the taste unpleasantly metallic.

The joat hooked up a microphone, plugged four hours of recorded conversation into the DK43 as informatic *hors*

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d'oeuvres, grabbed a hammer from the toolkit to talk with, and set to work.

It was slow, but the DK43 was a bright machine, and the more it learned, the faster things went. Soon Billy and the mohomole were holding lengthy, stumbling conversations. The main problem was not in the translation: it was understanding the resulting images. Here the joat's wide experience and unorthodox mentality helped a great deal.

Slowly, painfully, he pieced together factual items. The history and lifestyle of the mohomoles. The more he learned, the greater became his amazement at the richness of their society. Intelligent life! *That* would cause a gargantuan row if SpaDe could be informed.

It was a pity his wristband remote couldn't communicate with the *Lindilu* through eight miles of solid rock.

And, for all his efforts, he seemed no closer to escape.

Back to the mohomoles. He asked more probing questions, sought details of their philosophy of life, their social customs, the upbringing of children. There, he got a surprise.

"Small-ones are-none."

"Be-that-so, what-way increases/maintains the swarm?"

"Sad-sad-sadness is. Small-ones once-were. Now no-more."

Billy gripped his hammer more tightly. "Give-cause . . ." Oh Lord, how to say it? "Give-cause no-more-those-once-were."

"World-above once-was warm. Now too-cold. World-below still-warm, but too-heavy. Small-ones die."

That was clear enough. When the Femm had orbiformed Sear's Planet, the larger orbit made the surface cool. Childbirth must require warmth: the surface was too cold and the warmer deeps subject to pressures too high for the children. Even though the adults could survive the extremes of temperature and pressure, the species was dying.

So was the joat. *How the Hell do you get out of a hole eight miles deep? Fly?* If the joat could escape, he could save the mohomoles as well as himself. A balloon? No, there was nothing to make one from that would stand the heat. He was stuck at the end of an enormous tube. . . .

A tube.

There was one faint chance. It was an appalling idea. Death was an even more appalling idea: the gamble had to be taken. It all depended on the mohomoles' ability to tolerate heat.

He eventually put the question over.

"Possible-is to-live in most-low world-beneath, where the world is soft and warm-warm-*warm?*"

He waited.

"Warm-warm-*warm* is joy-upon-joy . . . but over-much is death."

"How-much is over-much?"

"One digestive cycle." Now, how long was *that?*

"Is how-long we sing-together over-much?"

"Negative. We-sing half a digestive cycle."

Jackpot! "Togetherness-for-self Wiseworldcleavingswarmguide progress into most-low soft-warm-world-beneath—not-over-much, not-death?"

"Possible-is. Give-cause togetherness-this-action."

"Possible-is self small-ones joyfully to-make return."

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* * *

The timing was crucial. Even if the main idea worked, *Lindilu* had to be in the right place. Billy began computing orbits. As the appointed time approached, he tapped on the oven door. "Go-now. Care be-with-you! Remember! Go-now in joy!"

"Remembrance-is. Soft-warm-world-beneath and not-world-here must come-close, but not-touch. Easy-is." The mohomole climbed clumsily up the insulated chute used to put samples into the oven. *I suppose it is easy,* thought the joat. *A creature that swims in the planetary mantle must surely develop an intuition for subcrustal flows.* He opened a side-hatch. The mohomole wriggled through to the shaft wall. For a second it paused with its snout-ring flat to the wall and tapped a final staccato message. Then it was gone, in a cloud of rock-dust. The closest translation that the joat could make was "Good snouting!"

After an hour, there were a series of taps on the roof. "Wiseworldcleaving-swarmguide has-progressed in joy-joy-joy!" *I hope that means he's been successful, and not just freaked out on a magma-trip. We'll soon see.*

Billy picked up a small object that he had just finished making—a simple exercise in chemistry and metalworking with the laboratory's excellent facilities—climbed to the lowest level, opened a small double-walled hatch in the floor, dropped the object through, scrambled up the ladder, ran to the sleeping area and threw himself onto the bed.

In Jiydyrrill's control room, an entire bank of lights went crimson. Simultaneously, sirens began to scream. One warning device began to emit steady pulses of infrasound.

For a second, he couldn't believe it. An *eruption warning?* Then training took over. He left the room at a run, heading for the nearest skeeter-bay. Breathless, he tumbled into the pilot's seat. A dozen Femm scrambled in after him.

"Anyone missing?"

The ground began to shake.

"No. Except Director Eton!"

"Isn't she in the visitor's dayroom?"

"No. She's gone out to inspect the second mobile laboratory that came in from Brinsley Wain three hours ago. It's out by the top of the shaft."

"The idiot! Why didn't she check herself out properly? I could have given her a lapel repeater. She won't even know that there's a—"

There was a distant rumble. Jiydyrrill whipped the skeeter off the ground, tilted its nose to forty degrees, and punched in the boosters. The acceleration pinned him to his seat.

Sherryl Eton smiled to herself. She had just removed a key component from the new laboratory's automatics and dropped it down the shaft. *They'll think it was left out by mistake during the rush to get it here. That will slow things down nicely.*

Then she felt the planet move. The distant rumble grew to an ear-splitting roar, and the ground shook violently. She thought: *earthquake!* and began to run. She found an empty groundcar, and took off along the roadway at top speed.

There was a shattering howl as a million tons of molten rock vented from

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the shaft. Deafened, confused, and utterly overwhelmed, she watched it climb towards the sun, falling back in a scarlet fountain. *That's pretty*, she thought. Then the shockwave hit and all thinking ceased.

The molten core of a planet is seldom the smooth ball that you see in pictures in holomags like *Quaternity Science*. Protrusions of liquid magma sprout like garden weeds along slip-faults in the crust. In some of these the rock encounters oil, water, or gas: the superheated vapor builds up enormous pressures, far in excess of the already awesome weight of the crustal rocks. And Sear's Planet, as the Femm overseer had said, was an extreme case.

Lying on the bed, Billy the Joat counted the seconds. The mohomobile's NMR-scopes had shown him a nice, big, bulging pocket of overpressurized magma, a mere two miles away. If all had gone as planned, Wiseworldcleavingswarmguide's fellow mohomoles would have opened up passages from that pocket, leading to a branching network of tunnels cupped around the bottom of the shaft.

Now drop a small but powerful bomb. . . .

I hope Jiydyrrill was right about his warning devices.

The first wave of superheated gas, a bare quarter of a mile ahead of the seething column of molten rock, hit the floor of the laboratory. *I hope to God this thing is as heatproof as the adverts say it is*, thought Billy, as he rose up the shaft like a bullet in the barrel of a gun, riding his own private volcano on a cushion of gas. *Jules Verne would be proud of me*, he thought, and blacked out.

The laboratory shot from the mouth of the shaft at a speed close to Sear's Planet's escape velocity, demolishing the pylon as it did so. This, and the atmosphere, would slow it: the joat had calculated that it would rise to a height of eleven miles before falling back. At that point, it all depended on *Lindilu* and a preprogrammed repetitive broadcast from his wristband remote.

On board *Lindilu* the sensitive receiver picked up the signal. The computer weighed its options: the main propulsors fired, and the space-yacht plunged planetwards, its skin heated close to danger-point by friction. The joat rose to meet it atop a pillar of fire. *Lindilu* swooped, cargo-bay gaping, and plucked the joat and his container from the sky. The doors closed and the ship began to tilt, pulling out of its power-dive a bare half-mile above the rooftops of Shum'n-al-Qyf, its sonic boom rattling every panel of homeoglass on the island. Still acting on instructions, it beat it out of the system at top speed.

I'm dead! thought Billy the Joat, in an ill-considered attempt to refute Descartes. Then logic took over: corpses don't have sore heads. (Do they? How can one—) He was alive: the plan must have worked.

He staggered to his feet, put on the coolsuit, and half-climbed, half-fell out of the hatch into the cargo-bay. The laboratory would still be pretty hot, but the *Lindilu* was made from an isosteel-titanium alloy. He scrambled out of the cargo-bay, deciding to retain the mohomobile as evidence of sabotage. Five

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minutes later he was hunched over the console, setting up a phasehop to Aphélix and a freewave call to the Space Department.

"You're a lunatic," said Palgandra admiringly. The joat, who was still growing new eardrums, lip-read the message, and shook his head.

"Nonsense! I admit, I was lucky. But there was no other choice."

"You've caused an almighty row, I'll tell you that. SpaDe has already sent a survey team in, and it's slapped a suspension order on all further development. The lawyers are having a field-day shoving injunctions up each other's legal briefs, but for the moment that order is holding."

"It will. My story will check out."

"Yes. And then there'll be *another* almighty row. Rule number one in the Quaternity book is *don't interfere with the habitat of an intelligent species*. There will be lengthy legal battles, with the Etonians and the Femm bringing in tame 'expert witnesses', who will—"

"Who will be discredited smartly by SpaDe, because SpaDe isn't so dumb, and neither are the courts. Then the Femm will have to re-orbiform Sear's Planet back into its original orbit, clone some artificial wysshhiij if they can still read the codes, and generally try to put the ecology back together again. I'll accept just the readjustment of the orbit; that's all we need to save the mohomoles from extinction."

"Yes. What with that, and the death of Sherryl Eton, you're not going to be popular!"

"It's her own fault. She shouldn't have played with fire."

"*You* have the temerity to— Jarneyvore, you make powerful enemies like the telephone company makes profits! It's a good job you aren't married: you'd be a liability to any wife!" He said the last flippantly, but he was watching for Billy's reaction.

The joat nodded glumly, thinking of Alaya. But it didn't hurt so much, now. He shrugged. "There's one good piece of news for the Etonians," he said. "The mohomoles will stay nearer the surface, and stop disturbing the deep flows. The buildings will stay up in future."

"That's all very well," said Palgandra. "And I'm not complaining about the outcome. But when Sear's Planet is re-orbiformed, its surface temperature will be high enough to melt zinc! Nobody could live in that. The Femm will be *furious!*"

"Damn it all, Palgandra," protested the joat. "My brief was to stop the buildings subsiding, and I have! You never said *one tiny word* about anyone *living* in them!" ■

● As is always the case when scientific questions are really fundamental, new ideas which, if they prevail, will overturn the old ones are resisted by all means in the name of science.

GEOFFREY BURBRIDGE

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Jack Alston

BLESSINGS WELL MIXED

A creator cannot always foresee the ultimate applications of his work. And the wellsprings of creativity are not only subtle, but sometimes fragile...

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"Don't tell me any more. I don't want to hear it." Stuart Richards dropped his head into his hands, letting out the sad sigh of one whose reality has suddenly become bent.

Even though she'd only been with him around other people before, Laura Keifer was familiar with the company founder's exaggerations of mood. He enjoyed those exaggerations for the effect they had, and they had always affected Keifer. She laughed, holding the laugh in for her own effect, as she sat down next to his vast ormolu-encrusted desk. She watched him for a moment, hardly noticing that he wasn't the most stylish of men. It didn't matter. His basic attraction for her was that she admired the work he did. The exterior was easily overlooked.

The hundred-and-thirty-storey, glass-surrounded office with its majestic view was daily familiar to her because her own office was an exact duplicate down the hall. So, while she waited, she glanced through the sheaf of papers she had had drawn up outlining the company's plans for dealing with the bizarre events of the last three days.

Before long Richards recovered enough so that his head could be held on with one hand. With the other he reached out for the papers. "The government said anything about what it's gonna do yet?"

She passed them over. "Not a peep. The consensus is to wait and see. The sixth and seventh pages there are from Legal. They go into possibles and probables in that area."

"Fine."

He sat back in his soft, brown leather chair and read over half the first page, flipped to the second, the third, fourth, then tossed the whole collation to the other end of the desk. "I can't take it. My paranoia can't take it. Five hours ago I was a happy man in Bermuda. The sun was right up there." He gestured with a muscular, tanned arm. He was in shirt sleeves. "The green surf was right here and the breeze smelled of coconuts." The arm fell to the desk. "Now I'm sitting here in my office on the top of the world and the world has succumbed to grievous acts of fecuce. Hell."

He swiveled around and stared out into the city distance. He was quiet for a time, then he spun around again. "OK. Let's see if I can't bring myself to feel a little better about all this if it's in a nice orderly, logical, rational pattern."

Keifer was honest. "I don't think it'll help much."

"Well," and he sat up, "we've got to try."

Keifer nodded and sat back into the black leather chair. She was one tired woman. As president of S.R. Automotives, she had been responsible for the company's final decisions outlined in those papers, and all the possibilities had been unsure ones. But they had been made. Now there was only the job of filling in Richards. If the situation hadn't been just slightly absurd in a way that appealed to her wry sense of humor, they'd have carted her away the first day.

Through her tiredness she leaned forward and took a cigar from the carved jade box on the desk. It was a huge maduro-wrapped monstrosity, and grinning faintly at the urge to create sym-

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pathetic magic—big, tough executive chomping and puffing a stogie—she sat back turning it end over end while ordering her thoughts.

She began unwrapping it. "It started two days ago at the peak of rush hour here in L.A. It was the Santa Monica Freeway. The pattern's not clear, but in fifteen minutes every one of our cars on that twelve-mile stretch of freeway vanished. All three model-years."

Five years before, Stuart Richards had perfected the Tri-ion boronate battery. He wasn't a research physicist/chemist, he was an automotive engineer by trade and ambition, and the battery made his dream car possible. It ran for 10,000 miles, and a $400 replacement of the catalyst screens would get another 10,000 miles. The car was a gem of engineering excellence. There were the highest safety standards, great acceleration, excellent braking and steering, high-level comfort and luxury—all with a predicted average life of 18 years per vehicle at prices below the gasoline-powered competition.

As Richards had dreamed, the S.R. Car was on the threshold of revolutionizing the automotive industry. The major car-makers had decided to wait and see if it was just a passing fad, if the technology was durable, before committing any capital in a new direction. In the first year the S.R. Car took 28 percent of the new car market, 32 percent the second, 37 this year, and a projected 45 percent next year.

The rich, fermented scents of the cigar made Keifer wrinkle her nose, but she kept turning it, studying the veins in the maduro. "Since that first night, the vanishings have spread to freeways across the country, even to cars we'd sold overseas. People driving along minding their business suddenly found themselves standing alongside the road with their car gone."

Richards wasn't dealing with it very well. He kept thinking about all his years of work to bring the perfect automobile to the people. "And nobody complained about their lost cars?"

Keifer looked at him and smiled a little ruefully. "Would you?"

After a moment Richards managed an empty smile. "No. No, I guess not. That part's been verified then?"

She took a deep breath, "Yeah, that first night. Something to do with the immune system of the body. As luck would have it, one of the drivers was terminal with lymph cancer. Fixed him right up. Perfect health. That's the outside verification. 'Course all of them were babbling about having perfect health. Somehow that bit of information was given to them during the exchange event." She looked at Richards for his reaction. "Not too bad a bargain, I'd say."

He was having an awful time with the bargain. His eyes went toward the sky. "Why me?"

Four years before, the Unidentified Flying Objects had decided to identify themselves. After years of zipping and hovering about the atmosphere disguised as swamp gas and weather balloons, the world had been contacted officially and invited to sign a Confederation Open Trade Pact.

It was hailed as the opportunity for the world to jump ahead a thousand, ten thousand years. All problems would be solved with a quantum leap in knowl-

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edge and technology. Humanity would finally enter the adult phase of development. High praise and higher promise flowed thick and heavy.

Stuart Richards had been too wrapped up with work on his battery at the time to take much notice of all the goings-on. He never even saw the famous picture of the signing of the treaty until two years later. The fact was, he had been too busy uncovering his own knowledge and technology to be much bothered by the possibilities of knowledge and technology from the stars. So when, to the chagrin of those doing the hailing and praising, the other members of the Open Trade Pact inexplicably reverted to being swamp gas and weather balloons and didn't answer their phones, Richards hardly noticed.

He was noticing now.

Keifer held the cigar with two brown-nailed fingertips. "As you can imagine, things were pretty interesting around here. It was a crazy two days. Nobody had any idea what was coming off. Then yesterday I got a phone invitation to come to the Surriplapdap embassy."

"Embassy!" This was a first. "They have an embassy?"

Something in Richards's exaggerations was beginning to strike her differently. It was bothering her. "Well, not exactly. They had something to present to the maker of the S.R. Car and wanted a representative to come and pick it up."

Richards sat up. "Oh? What was it?"

Automatically she shook her head at his interest. "You'll appreciate it more if I give you all the details first."

She stopped. What was she doing? It must be that she was tired. Treating the owner of the company like that. Cutting him off. Crazy. Where was her respect? He was a brilliant man.

Mulling that over, she stared at the cigar and the thought crossed her mind how pleasing it would be to light up one of these in the next policy meeting and exhale a great horrible cloud at the once-smug, now-superfluous, Lou Pollard, vice president of marketing. She looked at the thought, found it childish and wrong and concentrated the pleasure away.

It was easy. The returning tiredness had another smell to it. "The temporary embassy is over in Commerce at a recently out-of-business, condemned fried-fish take-out. They didn't clean it up, either. There's a couple plastic desks out front where the customers used to wait for orders. While I was there I only saw three of the Surriplapdap. They were humanoid, or they chose to look that way to me, and the place stinks to high heaven of old grease and older fish."

"That's an embassy?"

She shrugged, "Maybe it reminds them of home. They told me they took it because of the smell. I never asked whether that meant they liked the smell or were revolted by it."

"And these are the aliens we signed a pact with? Incredible!" He pounded his hands on the desk. "I don't believe it!" Shaking his head, he sat back. "All right, what was it they gave you?"

Keifer held up her hand to make him wait. The gesture surprised her again. It was brash. Why was she acting this way? Then it hit her that there was a childish streak in Richards—pounding the desk like that—and she was re-

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sponding to it. The owner of the company—childish? Naw. The man was a genius. She was just tired, tired and running on her managerial instincts.

She shook it off. "I'm the only person so far to be allowed in the embassy. The location was on the news the first night, so I expected to have to fight my way through a mile of people trying to get in. But the Surriplapdap have some way of altering the minds of any people trying to get there. It comes off as getting lost. A couple of news services tried a remote-control vehicle, but the same thing happened to the guy ten miles away controlling the vehicle."

The cleverness of it appealed to something in Richards and he latched onto the concept. "Maybe they should have used a helicopter? They wouldn't have gotten lost then. Clear line of sight. They could follow it right in."

She waved that off with the cigar. "No, they tried that. Got them before they could even see it. Anybody with the intention of getting there gets lost."

He stared out into the room, fascinated. "I really like that. Wonder how they do it? Be handy to have."

Keifer could agree with that. "I'll take half a dozen. I'll even pay delivery." She took a deep breath. "Anyway, I had no trouble getting there, and when I walked in the first thing they did was make their presentation. Then they said they'd answer any questions I'd care to ask."

His eyes lit up. "Where is it?"

She pointed. "In your desk drawer there. The locked middle one."

Richards fumbled out his keys and opened it up. There was a thick leather folder lined with red velvet. Inside was a square slab of silvery metal thirty centimeters on a side. In the middle was embossed an odd crest that looked like a knobby asteroid with fingers sticking out of it in all directions. Around that were rows of odd printing, straight lines joined at right angles or forty-fives, also embossed in the metal. The piece must have had defraction grating lines cut in it, because the letters all gave off rainbow light.

He smiled at it, "Pretty."

"Pretty expensive. It's iridium."

"Oh, yeah?"

"Yeah. About $250,000-worth there."

Richards weighed it up and down in his hands, then squinted at it. "What's it say?"

"I quote: 'In thanks for allowing us so much enjoyment.' "

"Enjoyment, eh?" He almost liked the sound of it. "What am I being thanked for?"

This part would not be fun. She glanced at him, saw his eagerness and got a flash image of him as a little boy playing with toy cars, putting them together. It unnerved her somehow, but it subsided fast and she was left looking at the owner of the company. She avoided his eyes and her uneasy feelings by studying scuff marks in the carpet. "It seems the Surriplapdap come from a heavy world in relation to ours. More gravity and their atmosphere is 42 percent oxygen."

That explained nothing to Richards. He waited.

She went on with it. "It seems that this combination of things causes the Tri-ion boronate battery to explode into

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red, blue, and green lightning when the casing is smashed."

"Smashed!" He was still holding the iridium note. "It's impossible to break those casings. I made them breakproof. I designed them that way!" He was te.

The show of outrage struck Keifer as silly. It annoyed her. "The explanation I got at the embassy was that they had to rig explosives to the batteries to break them."

That was some satisfaction to him, but not much. "You mean they just blow up my cars—like the Fourth of July?"

She went on, still trying to figure out her annoyance, "No. It seems they have one day a week that has some deep religious significance. It's a day of rest. And the S.R. Car was taken there for one of the new attractions."

Oddly wrinkled brow, "Attractions?"

"Their word." She looked up at him again and found it hard to reconcile this man with the Stuart Richards she knew, or thought she knew. "It seems there's a kind of demolition derby held on a huge, flat plain, a whole valley actually, that's paved. They start out with nine thousand of them lined up like the sides of a triangle, teams of Yes, No and Maybe. They all head toward the center of the triangle and the winning team has the most cars left unexploded at the end of the day. They're all individually robot-controlled. They told me the game has a kind of mystical significance to them. It's used for making and settling bets and for guidance about decisions in the coming week."

Richards was suffering disbelief. He stared at her.

She finished it up as a feeling of almost total dislike of him came over her. She had to concentrate hard to keep it out of her voice. "The first one of the events was held before the morning I was at the embassy. It was reported to be a huge success. That's why the note."

Richards was looking at the thank-you note in his hands, shaking his head, trying to cope. He wasn't having much luck. It was his life's work. All of his energy for twenty years had gone into developing the S.R. Car. It had been his dream to bring the perfect form of personal transportation to the people. He'd done it with a joy of success beyond the doing. It was recognition. It was personal validation. Now it was being used to play games of chance somewhere out among the stars.

He looked at Keifer, something plaintive in his expression. "They've got almost six million of my cars."

Keifer nodded, following his thought closely to avoid facing this new feeling of resentment and anger that was coming over her. "They're stockpiling. They feel the game will go on for quite some time, judging from the success of the first one."

Richards lapsed into silence.

So did Keifer.

Finally, his voice low, "Did they tell you why they didn't just place an order with us? I mean with the company directly?"

"I didn't ask." She shifted in the chair, slowly retreating into her guise of presidential authority to get her through the rest of their time together. "It seems they only deal with individuals. When they refused to acknowledge communications after signing the Trade

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Pact, it was rumored that they were dealing with individuals, trading. That's not just the Surriplapdap, but all twenty-eight members of the Pact. It's assumed that it's not their policy to deal with governments or organizations. So, if they wanted our cars, it would be strictly between the owners of the cars and the Surriplapdap. That's why they opened up that embassy. To handle any complaints. There haven't been any as yet, that I know of."

Richards was seeing his cars exploding all around him. "What kind of organization did we sign a pact with! They must be a bunch of thugs!"

She had detached her feelings from him. It was just business now, and she could handle that. "There's been some talk about that. Mostly by the governments and large organizations. Nobody knows."

Richards's expression had slowly changed. A sense of peevishness came over him; he felt put upon, and since he'd learned as a child that both feelings were bad, he was momentarily left without any feelings. After a while he sighed. "OK, what's the status of my car now?"

Keifer sat forward and slid the cigar into the desk space between the jade box and the bronze-world lighter that had been an award from the Automotive Engineers Association. "For now the company is going great guns. Even though we didn't need it, this thing has been a boon for us. All the assembly lines are running at full capacity twenty-four hours a day. We're putting out a new car every two minutes without even beginning to meet the demand. Also in that area, the board decided to hold off any decision on expanding production facilities until we know more about the duration of the situation."

"I see." He stared at the thank-you note, a pained look on his face. "Have you decided to raise prices yet?"

"No. The government would undoubtedly come down on us if we tried." She knew it was a point of pride with him. "No, we decided to leave that up to the dealerships."

That pleased him a lot. "Fine idea. Any other good news?"

"Just a couple things. We had to boost security around the plants and we've had to supply security to guarantee delivery of shipments to the dealers. There were some hijackings yesterday and earlier today. Legal thinks we could have some lawsuits over that in the future. They also say there may be some patent infringements if all this goes on for any length of time. If it does, we might best be served by contracting out some of the rights."

"That all?"

It was over. "That's it."

He stood up, "Thanks, Keifer, for giving it to me straight."

She could sense he'd split off that exaggerating part of his personality and blocked it away. Automatic social graces were all he was showing now, and seeing that kind of retreat only enhanced the anger that had been slowly building within her. It was confusing, because she also felt sad about what was happening to his work.

When she stood up, she realized for the first time that she was half a head taller than he. And then, with that realization, she suddenly saw where the anger had come from. She'd seen him

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acting childish and silly, and her image of him as the heroic inventor and creator of the S.R. Car had fallen apart. He'd always had an aura of male strength and magic for her. She resented losing it. She didn't know what she expected him to do in the face of what had happened, but she didn't *want* him to act outraged and irate.

Seeing all that clearly for the first time, the anger fell apart, but she still resented the loss. "I'm sorry about all this."

"Yeah," and he closed the red velvet folder with a bit of a hearty chuckle, "if it wasn't so weird, I guess I'd scream. Maybe I will later." They both smiled. "I'll let you know if I think of anything worthwhile."

"OK."

The smile was empty both ways.

Losing him, losing that image of him, feeling it gone, made an odd fear start to move through her. She shook it off. It was all really no problem for her. She was the company president and the company would get along fine. With a shrug that was partly tiredness she decided that these people who create things are really basically just children in some essential part, and that was the way they acted, the way they were.

About to leave, she felt a brief wistfulness come over her. Then she looked at him with a moment's insight about the future that turned to curiosity. "You going to stay around?"

He thought on it, staring at his desktop. "I don't know. Maybe. I'll let you know."

"All right. Later," and she went out, putting it all behind her, heading for home and the first good night's sleep in three long days.

Left alone, Richards went over to look out the south-facing window. Quite a few times before he'd stood and looked out at the sprawl of buildings and streets of the city. He liked it, liked the feel of things built up out of creative talent and dreams, and he had found pleasure in counting himself as one of those dreamers. Now it was feeling differently to him.

Satisfied that his S.R. Car was doing what he had wished for the world of personal transportation, he'd gone to Bermuda to relax in the sun and make like a happy vegetable. Initially he'd only planned to stay there for a month, but by the time he'd gotten that call yesterday to return to L.A., he'd been there for seven months. He liked the daily round of sun and fun and leisure. It grew on him—and he on it. But over the last three weeks some kind of vague guilt had begun to insinuate itself on him, and he had started thinking about another project.

He knew there were large sumps full of toxic waste materials on all the oil refinery properties the world over. These were by-products of the refining process. They were illegal in most places, but that didn't make them go away. He was thinking of designing a filtration system to clean up those sumps, and by way of incentive, the process might get out the rest of the oil as well. He'd been toying with the idea of coming back here to L.A. to work on it before he'd gotten the phone call, because he found it very hard to concentrate in Bermuda. If he was going to work he knew it would have to be back here.

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Standing at that window, looking out over the city where not one of his cars was running, he was trying to make up his mind about the new project. Because of all the years with the S.R. Car, he knew what lay ahead for him: the long hours of isolated work, the wrong turnings along the way with no one to blame but himself, all the painful times. Was he going to stay here in L.A. and get to work?

He was watching a jet with a long white contrail crawl across the blue sky and he took in the feel of the city below, reaching out for some measure of the old inspiration that had spurred him on before. It was hard coming, dragging it up through the possibility that all this work, too, might be wiped out by the whim of some alien culture. He took a deep breath, squeezing it back out through tight lips.

He guessed he'd have to give it a try.

His secretary buzzed him on the intercom. He went over and pushed the button. "Yes?"

She was agitated. "Oh, Mr. Richards! The message just came through."

"Yes?"

She hesitated. "Well, somebody has, uh, just stolen your car from the garage compound. The attendant caught them driving off, but he couldn't stop them. We called the police, but they don't think there's any chance of . . ."

He didn't hear the rest. Jolted out of thinking, he felt a pang of grief shoot through him. Somebody had no doubt heard about his car. He had modified it with his own two hands. He knew every nut and bolt. Tri-ion boronate battery-powered, it was a vintage, jet-black, 1953 Mercedes Benz Coupe. It was a gem. It was *his* gem, and it was destined for a demolition derby somewhere across the stars.

He pushed the grief aside, not wanting to deal with another loss. "Thank you, Peters. Let me know if they find it." Then, just as he was about to release the button, he stared out at the city and added, "Peters, line up a plane reservation for me to Bermuda. Sometime tomorrow morning."

"All right, Mr. Richards."

"Thank you," and he let go of the button.

For almost a minute he didn't move. He was waiting, bracing himself for the awful repercussions he knew he was going to feel for quitting and turning his back on any more projects. He waited.

And there weren't any.

In fact, he felt much better. He was well clear of all the long turmoil. It was good.

He looked at the black chair across from his desk. Most of the joy in his life came from his work, came from getting the admiration and respect of people around him; and he'd watched the way Keifer had withdrawn her feelings for him when he'd reacted to the loss of his cars. He'd felt it, and he didn't need to stick around for any more of that kind of pain, either. Seeing that, he knew he was right.

He took a deep breath and this time let it out easily as he went back over by the window and looked down on the city with rush hour coming on. They wouldn't get him again. Knowing it felt good. Yet, even as the thought came, there was a niggling of get-to-work guilt, and he could sense what it would be like to

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lose the pleasure he got from creating things.

But there were other pleasures, in Bermuda, and he quickly saw that it would only be a minor irritation. It could be put up with.

It was better than the alternative.

He smiled from his new perspective and he could only find one regret: he might have to postpone his departure.

There was one last thing he wanted. Standing there, he concentrated, using his creative genius to figure out a way to get hold of one of his S.R. Cars from the factory and get it on the freeway before he left for Bermuda.

Not long before sunset, he figured out how to do it.

Talent was a wonderful thing.

It would be easy. ■

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Thomas A. Easton

THE BLUE-TAIL FLY

Solutions to problems
don't last forever
without maintenance.
Old injustices
have a way of
recurring—and sometimes
old redresses can be
adapted to new circumstances.

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Jimmie Crack Corn, and I don't care,
Jimmie Crack Corn, and I don't care,
Jimmie Crack Corn, and I don't care,
My Master's gone away.

The field stretched to the horizon, flat, striped with rows of corn and beans and melons, dotted with moving cultivators, machines that worked a dozen rows at once. The angular constructions stirred fertilizers, growth promoters, and weed-poisons into the soil. They were essential to the colony's success, for supplies could not be shipped from other worlds.

They were needed, but replacements were needed more. Most of the machines were old now. New ones could not yet be built. Repairs were makeshift, and the machines had a way of breaking. As now. One machine, man-high and six men long, loomed over the corn, a trickle of liquid running from its nozzles, its wheels still. A wisp of smoke drifted from beneath the cowling that shielded its silent engine. A bluish crust, threaded by broken cables, stained the side of the power cell. One of the spidery natives, wearing the expression his kind would read as dejection, sat in the narrow, open cab welded above the rear wheels. His knees jutted up beside his ears, a short bludgeon dangled from his hand, and his eyes watched an approaching ground car. Numbers marked the blue skin of his chest and back.

The car's driver was a second native. He too rode in an open cab and bore a bludgeon, swinging from one wrist by a loop. His expression was neutral, observing, accepting. He dared not show any other face, for his passengers were Masters. One was the owner of this plantation, come to inspect the latest damage. The second was a repairman.

The car stopped, its wheels straddling a single row of young corn. Its driver descended, gripping his club, his eyes alertly scanning the ground nearby. Its passengers opened their sealed, air-conditioned compartment and descended too, the farmer first, grunting with the effort of heaving his alien bulk through the door, sweat bursting from his skin as the heat struck him. Hutch Jackson was fat even by Human standards; to the natives he was grotesque. His employee, Alan Parks, was thinner, but still bulkier than any native could call normal. Both wore guns at their waists.

Jackson ran one hand across his cheek and over the back of his neck. "Not too hot, today," he wheezed. "Damn humbugs!" The bugs that attacked the cultivators stayed underground on days hot enough to confuse their sensors. "You keep your eyes open, Spider! I don't want one of the things homing on me. Now, where's that dork-it guard?"

The native on the cultivator jumped to the ground. His bludgeon swung free, dangling from its wrist loop. He said nothing.

"How the hell did you manage to miss that one?" demanded Jackson. "You fall asleep?" His voice was bitter and angry. He had lost too many machines to the bugs, and a few men as well. He had even lost natives, for the bugs homed on their heat too, piercing even their chitinous skins with their momentum, delivering their eggs to the unwilling hospitality of mammalian pantries.

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The native pointed with his bludgeon. "Were two," he said. Jackson ignored his gesture, but Parks looked. A humbug lay in the shade of a corn plant, its bullet-shaped carapace broken, its wings askew.

Jackson's voice turned scornful. "So? Getting old? Slow? You're supposed to be faster than we are, fast enough to stop a dozen of the things. Should I send you to the packing sheds? Or would a touch of the chair speed you up?"

The native's limbs trembled. The choice was no choice at all. The sheds were unprotected, and the workers there had no clubs. Their skins were some protection, but not enough, and unarmed they could do no more than dream of the bug-free Forest. The sheds were death. The chair, on the other hand, was torment; a device of clamps and electrodes that made one yearn for death.

Parks spoke softly. "You should look, Hutch. He couldn't help it." He too pointed. "They came from opposite sides of the rig."

Jackson finally looked. He grunted as if he begrudged justice. He said, "Yeah. Okay. Get back on your horse, Spider. And check it out, Alan. I don't want to sweat here any longer than I have to."

"Doesn't look bad from here. Just some busted wiring. Not like a holed radiator or fuel line."

As Parks spoke, their driver moved. His limbs flashed in the bright sunlight. His bludgeon swung. There was a "Crack!" and a humbug fell beside the car.

"Move it, Alan."

"Right away." Parks bent to his work, nimble fingers flying as he spliced and connected. He added, "I'd like to see these fellows playing baseball someday. No strikes, no balls. Just homers, one right after the other."

Their driver watched and listened. He had never seen the Home Forest. He had been born here, on the plain, on the plowed Flats of the colonists' farms. And he had never left. The Humans would not allow it. Their need was too great.

He understood their need, but not their choice of farmland. The forests to the north were cooler and more hospitable. They were free of the warm-seekers, the humbugs. But he could not speak of this to the Humans. To their eyes he was a creature, alien and strange, yet better than a beast, for he needed neither reins nor whip to guide his labors in the fields and around the Masters. He could speak and be spoken to, report and be instructed. He had a mind of his own, and he had the initiative the machines lacked. And he was one of many, vastly outnumbering the Humans so newly come to his World. Yet he was valued only for his lesser vulnerability and his speed, used only to protect the Humans and their machines from the warm-seekers, to fetch and carry when he was not assigned to drive or guard.

His name was Simtu'l. The Humans called him and all his kind "Spider" in honor of their long limbs and small, thin torsos. The word bore no relation to his true identity, the meaning of Simtu'l in the tongue no Human had made the effort to learn. He was the Leaf-Plucker, named so for his mother's dream of return to the Forest.

He jumped when the Master spoke.

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"Hey, Spider. I'm dry. Fetch the thermos." He scanned the ground one more time, searching for any sign of an erupting bug, gestured to the cultivator guard to carry on the watch, and turned to the car. The thermos held a cold mixture of melon juice and alcohol. He had tasted it once and thought it less refreshing than water. But the Master drank almost nothing else.

When I was young, I used to wait
Upon old Master, and pass his plate,
And fetch the bottle when he got dry,
And brush away the blue-tail fly.

Jimmie Crack Corn, and I don't care,
Jimmie Crack Corn, and I don't care,
Jimmie Crack Corn, and I don't care,
My Master's gone away.

The route to town took them past a freshly plowed area. The crops had been harvested here, and now the season's second planting was at hand. There would be a third before the weather grew too hot and dry. Then the Flats would bake, waiting for the World's orbit to bring round again the relief of cloud and rain. Men would bake, too, and even the natives would wish for the shade of their ancestral Home.

As they passed, Simtu'l registered the bodies on the new-turned soil, the scent of dirt and corruption. The plows disturbed the warm-seekers. They rose from their burrows in swarms. The engines of the tractors were shielded, but they needed too much cooling air. The bugs found entry through air intakes and exhaust pipes. They smashed through screens and too-thin metal. The bludgeons were necessary, but they were not enough. Tractors died and were repaired. Natives died and were not. Instead, once the bugs had left and the fields were quiet, the plows would return to plow the bodies under. The Masters regretted the loss of labor, but they appreciated the value of free fertilizer.

The bugs were not gone yet. They flew, humming their name-songs, patrolling, seeking stable soil, new heat, fresh meat. One sensed the car and shot toward it. Simtu'l noticed, swung from his seat, and batted it expertly. This was his job: to keep the bugs from car and Master, to fetch, to carry, indoors and out. He knew his position was envied by his fellows in the fields and sheds. Driver and houseboy, his life was cooler and more sheltered than theirs, more comfortable, safer, and likely to be longer.

His position was privileged. He appreciated that, but he did not greatly value it. He wished for freedom, for the Forest of Home, with a persistent yearning. Yet he knew escape was impossible. If he tried, he would soon be caught, and then there would be the chair. He had tasted that before, and he had seen others taste it too. He wanted no more of it.

The town was small, a huddle of concrete and wood buildings in the center of a broad concrete apron, a barrier against the bugs. Here one could walk in the open securely, not fearing, not watching and listening and hefting one's club. If the place was ugly, no one

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cared, for safety itself was beauty enough for now. Better things would come as the colony matured, so said the Humans.

Simtu'l parked the car beside the store, a grey cube flanked by tavern and inn, faced by garage and combouse, surrounded by dwellings for the few local colonists. The buildings were close, and the streets—alleys—were shaded by overhangs.

He opened the car door for his Masters and watched them enter the store. A part was waiting, a part for the cooler that made Jackson Manor so much more pleasant than the metal shanties the Masters assigned their slaves. It would not take long to fetch it, but then there would be talk, and surely a visit to the tavern. Simtu'l scanned the street. Three of his fellows occupied a bench beside the tavern door, waiting for their Masters. He joined them.

"Simtu'l."

"Tana'l. Bindru'l. Kinto'l."

"They work us hard." Bindru'l used the Masters' tongue. Their own was forbidden.

"As always."

"When will we see the Forest again?"

Simtu'l shrugged. Whenever two natives met in leisure, with no Masters to hear, the conversation opened much like this. What did it gain them? Nothing.

"You do not care?"

"I care. But what can we do?"

They fell silent as Simtu'l's Masters left the store and stepped toward them. As they pushed the tavern door open, Jackson said, "Hey, Spider. We won't be long, so don't you go anywhere."

Simtu'l bowed his head, but he did not answer. When the Humans were gone, Tana'l spoke. "You should care," he said. "Some Masters are worse than others."

"Yours is not the best," added Kinto'l.

"What can we do?"

"Drive them out?"

"They have the weapons."

"We have the numbers."

"We have more than that," said Tana'l.

They fell silent as a cool breeze touched their blue skins. They turned their heads. The tavern door was opening, and Simtu'l's Master was standing there. "I heard that," he grunted. "You're rebels, the lot of you. Ingrates." His face, oozing sweat as the hot air struck it, was red with anger. But his voice was soft. "What did you mean, Spider?"

Tana'l bowed his head. His bludgeon hung by its loop from his wrist.

"You won't talk? Perhaps the chair would help?"

Tana'l remained silent. His friends edged away on the bench. Simtu'l began to stand.

"Sit, ingrate," said Jackson. Simtu'l sat. "It wouldn't, would it? There's only one thing to do." One fat hand pried at the flap of his holster. He drew his pistol. There was a flat snapping sound, and Tana'l fell to one side.

As his blood purpled the concrete, Bindru'l slid from the bench to his knees. He began a low keening. Kinto'l huddled against the far end of the bench as if awaiting a second shot. Simtu'l stiffened with rage and grief, struggling not to leap to his feet, not to strike his Master. Tana'l had been a friend, known since childhood, brother to his mother's sister's daughter. Now he was gone,

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victim of careless words and more careless action.

Jackson glared. He expelled the spent cartridge and replaced it. He slid the gun back into its holster and said, "He had the ideas. Don't you get any, Spiders. Mind your business. And you—" he focussed on Simtu'l— "there'll be a touch of the chair when we get home. Just to help you remember."

He retreated into the tavern. Simtu'l sighed heavily. What could be done? Nothing, now. Nothing but help Bindru'l and Kinto'l carry off the husk and stow it in the back of their Master's car. Wordlessly. In the Forest, Tana'l would have been floated off on a river or a stream, perched on a limb for the birds to know, or perhaps housed beneath a cairn. Here he would be dumped on a field as fertilizer.

And when he'd ride in the
afternoon,
I'd follow with a hickory broom.
The pony being rather shy,
When bitten by the blue-tail fly.

Jimmie Crack Corn, and I don't
care,
Jimmie Crack Corn, and I don't
care,
Jimmie Crack Corn, and I don't
care,
My Master's gone away.

What could they do? Simtu'l wondered, more and more, as he thought of Tana'l's fate, as he remembered others, killed by their Masters or by the warm-seekers they had rarely met before the Humans came.

What could they do? What *should* they do? They had shelter on the Flats, food and medicine and even schools, all things they had lacked before, the Humans told them. Things they had not needed before, they told themselves. The Forest had been kinder.

Should they do anything? They owed the Humans nothing except, perhaps, thanks for the concept of a freedom they had never known they had. Revenge? That idea was foreign to them still, though they were learning.

Could they do anything? The Masters had the weapons. That was why they were Masters. Yet they were vulnerable in at least one way. They needed Simtu'l and his kind to ward off the warm-seekers. They needed their hard skins, their speed, their very cheapness. Without their slaves, the Masters might perish utterly from the World. Simtu'l grinned, showing his teeth at the thought.

He was still thinking when his Master called him to drive the car. It was time to inspect the fields. "Fetch the jug!" he cried. "And don't forget your club, or you'll see the chair again."

Simtu'l shuddered. Once was more than enough, and he had seen it, tasted it, screamed in its embrace many times since leaving childhood behind. His Master was fond of the thing.

He did as he was bid. He rose from his bench in the cool hallway of the Manor, floored with stone, roofed with wooden beams, flanked by rooms of padded comfort he could never share. He took his club from its hook on the stone wall, retrieved the thermos from the cooler in the kitchen, and entered the sullen heat of the day beyond his Master's shelter. The car was kept in

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a metal shed, as hot as Simtu'l's own quarters.

He stowed the jug, started the engine, and swung the car around the white-washed Manor to the Master's entrance—columned, he had heard, in memory of another world and another time. He held the car door until his Master's bulk was safely seated, and then he took the wheel again.

They checked the harvest and the planting, heard the reports of storehouse and packing shed and maintenance shop, heard the body counts from the overseers. At one point, Simtu'l heard his Master say, "If they can't keep up by breeding, we'll have to find more wild ones. Dork-it nuisance! It'll take forever to break them."

At every stop, the Master left the car to view his holdings, to speak and listen. At every stop, Simtu'l watched for the warm-seekers and batted them to the ground when they came too near. He pretended not to notice the confident eyes of the Humans, the wistful glances of his fellows, as he fulfilled his duty. But he noticed, and he wondered what might happen if he failed but once. What might happen if all his kind dropped their bludgeons and walked off to the forest again? They would be chased, of course, brought back and punished. But what might happen if they all grew slightly clumsy? If they swung their clubs and missed? If . . . ? Could the warm-seekers be used?

The last stop was a newly plowed field, bare and unplanted, the soil crumbling under the glare of the sun. Master Jackson left the car once more, saying, "Look sharp, Spider!" and bent, grunting, to squeeze the dirt between his fingers. Simtu'l watched the ground, near and far, for the puffs of dust that marked erupting bugs. He saw, he danced, he swung, and—he missed.

His Master screamed. He gasped and fell. He quivered and was still. He was dead already, swift victim of the bug's toxins, food for its larvae.

One day he rode around the farm,
The flies so numerous they did swarm.
One chanced to bite him on the thigh.
The devil take the blue-tail fly.

Jimmie Crack Corn, and I don't care,
Jimmie Crack Corn, and I don't care,
Jimmie Crack Corn, and I don't care,
My Master's gone away.

His rebellion done for the moment, Simtu'l returned to his duty. He grappled with his Master, seized the Human by the arms, hauled him into the cool of the car, and returned to the Manor. There he called the town to report the death. He managed to sound saddened, regretful, and he gave no hint that the death had been intended.

Humans came for the body and for Simtu'l. They questioned him, but he told them only what he wished them to think. They confined him, but he enjoyed the respite from his own metal shanty. Finally, they held the inquest, but it was brief and "death by misadventure" was its verdict. Simtu'l was not punished for his failure, for such things happened and the natives were

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known to be reliable. The chairs saw to that, after all.

Simtu'l was released, to find the Manor in the hands of the Master's sole grown child, a Human no less cruel, but leaner, younger, and with a keener eye to profit. Already, the new Master had given his workers metal shields to protect themselves, and he carried one himself.

Yet Simtu'l was not appeased. He still yearned for the Forest, for freedom and a World free of Masters. And now he knew that his dream was more than a dream. It could be made real. The Masters could die.

Simtu'l was not surprised to find that his work now lay in the fields. Accident or no, it seemed that Den Jackson did not trust him, favoring instead the houseboy from his City home. But his new status held advantages. He was with his fellows now. He could talk to them more, tell them his thoughts, invite them to his shed at night.

The first gathering took place at second harvest, when plowtime was once more thinning the native ranks. Simtu'l sat in his shed, warmed by the heat held by metal roof and walls, lit by a single fluorescent rod. He sat on a crude chair, fashioned from a cast-off tire, its hole filled and padded by a sack of corn shucks. His fellows sat near, on a stool, a bench, the edge of his sleeping pallet. They were nameless, as conspirators should ever be.

He spoke more plainly now. He told them what he had done, or failed to do. He told them why. He told them how. He repeated his questions and his fears, his concerns and his hopes.

When he finally paused, one said, "I agree. The Humans should leave us our lives and our World. They are ours, not theirs. Yet have they not their own lives?"

"But how much of their lives do they owe us for those they have cost us?" asked the second.

"Whatever we choose to claim," said Simtu'l.

The third gestured thoughtfully. "But we do not claim by holding back our blows. The warm-seekers do that, the World itself."

"If the Forest yearns for our return as we yearn for it. . . ."

"If the Humans do not kill in return. . . ."

"If they can find no other food. . . ."

Simtu'l did not need to urge them to follow his lead. His wish, his message, his example were clear. The careful error might free them all, might let their World reject the Humans as they should long since have been rejected.

The pony run, he jump, he pitch,
He threw old Master in the ditch.
He died, and the jury wondered
why.
The verdict was the blue-tail fly.

Jimmie Crack Corn, and I don't
care,
Jimmie Crack Corn, and I don't
care,
Jimmie Crack Corn, and I don't
care,
My Master's gone away.

Simtu'l's thoughts were heard, and they spread across the fields and through the sheds. The bludgeons missed more often. Machines died, and so did Mas-

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ters. So did natives, but that price was paid freely. So did Simtu'l, and his fellows mourned.

When challenged, the natives said simply that all the stupid warm-seekers had been killed. The survivors knew enough to dodge. Told this, Masters who knew of such things said it might well be. Similar things had happened before, even long ago, back on old Earth.

Two seasons saw the Flats in weeds, the Manors empty, the City hungry. There was no adequate substitute for the natives and their clubs.

Three saw the Masters turning to the Forest and the Sea for food, their numbers fallen, their ambitions dead.

Four saw the Masters leaving, taking ship for other, kinder worlds. A few remained, no longer Masters, able to live beside Simtu'l's kin, granting each the other's freedom, sharing each the other's future. The Flats were abandoned utterly, and the Forest knew life again.

Five saw Simtu'l himself forgotten. It was not the way of his kind to erect statues or monuments.

They laid him under a 'simmon tree.
His epitaph is there to see,
"Beneath this stone I'm forced to lie,
A victim of the blue-tail fly."

Jimmie Crack Corn, and I don't care,
Jimmie Crack Corn, and I don't care,
Jimmie Crack Corn, and I don't care,
My Master's gone away. ■

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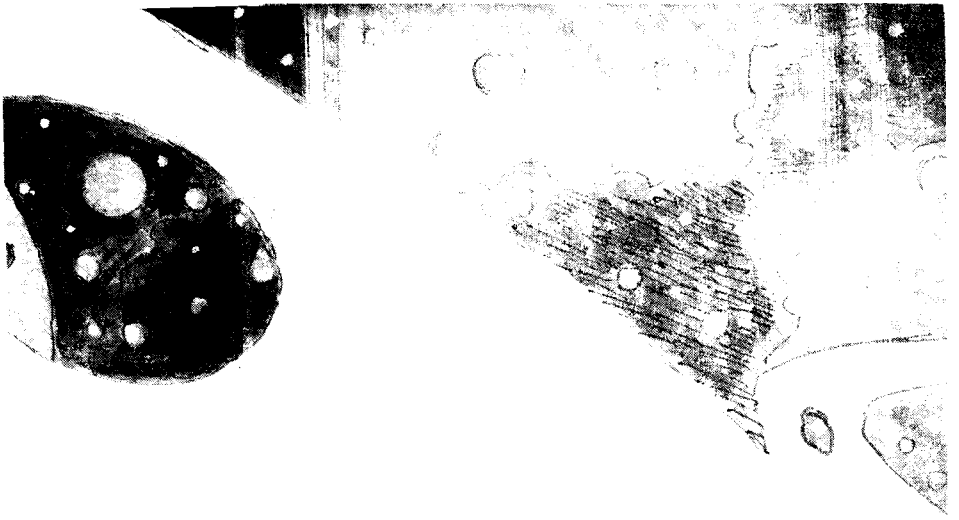

Joe Martino

THE ICEWORM SPECIAL

Education is exceedingly important—and one of its most important parts is the recognition that it's never complete.

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Look, I don't have anything against newjohns. After all, we were all new out here once. Even though it's been twenty years now, I remember how green I was when I first came out to the Rings. More than once I came close to getting killed. The tricks I learned from the older hands saved my life several times. They'd had to learn those tricks the hard way. And I've paid my debt to them by passing on everything I've learned to the newjohns.

Maybe that's what aggravates me. Things are a lot easier now. The newjohns can get away with dumb stunts that would have killed me. But it's silly to say that's unfair. After all, what we've all been working hard to do is make it safer out here.

Anyhow, I had just finished bossing the job of rigging the jet drives on a big chunk of ice from the Rings. The iceberg had been accepted by the Captain who was to command it on the long trip inwards to the Belt, where it would be melted down for water. So I was sitting in the Twelve Moons Saloon, in the Wheel which orbits Titan, enjoying some well-earned R&R. The place was packed and noisy. Two or three other rigging jobs had been finished about the same time as mine, and the work crews had all come in looking for the bright lights. I was sitting at a table by myself and was spending most of my time leaning back in the chair and staring at the famous Saturn mural on the ceiling. Clancy, the owner of the Twelve Moons, had gotten it painted by a talented but hardluck artist who had drifted out this way. Clancy just kept feeding him and supplying him with booze while he painted. And that thing looked *real*. Believe me. I spend my working hours in space, where Saturn is always visible. And I *know* what Saturn looks like. Now that the artist is dead, the mural is worth a fortune. It's well known throughout the Solar System.

I had just leaned forward to put my glass down when I spotted this newjohn coming in the door. And I instantly took a dislike to him. No rational reason, I admit. I just didn't like him. Maybe it was the abrasion suit he was wearing. That's the coverall that goes over your space suit of skin-tight mesh. The mesh allows you to sweat to cool yourself, while it resists the internal pressure of your body. The coverall keeps you from ripping holes in the mesh every time you brush against something rough, like a chunk of asteroid. Nothing wrong with wearing an abrasion suit inside the Wheel. Most space workers wear them everywhere. It's kind of like a lodge emblem, or a fraternity ring. Lets you know who your peers are, and who are merely ship's crew or Wheel dwellers. I was wearing my oldest abrasion suit. The fibers in it were all puffed up from being exposed to vacuum for thousands of hours. But with one glance I could tell that newjohn's suit had never been worn outside an airlock.

He looked around the room, and to my disgust saw that I was one of the few people sitting alone. I don't object to company, of course. It's just that when I'm fresh off a job, I like to relax by myself a bit. But he headed my way.

"Mind if I join you, Captain?"

"I didn't know I was coming apart," I growled back at him. I wasn't feeling very original, and the newjohn didn't deserve better anyway. But he gave a

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hearty laugh, like that old chestnut was the funniest thing since Eve tickled Adam's rib, and sat down across from me.

The "Captain" was more than just a courtesy title. I had actually captained an iceberg in to the Belt once. The insignia still showed on my suit. But once was enough. I decided I liked rigging the icebergs, and was good at it, but sweating out that long fall Sunwards wasn't my cup of tea.

He pointed to the empty glass I'd just put down. "May I buy you a refill, Captain?"

Okay, I thought, this newjohn may be putting on airs, trying to look like a space worker when he isn't one, but at least he's trying to be friendly. I'll try to be friendly back to him. "Thank you," I said to him. "I'd be pleased to have you set them up."

He waved his arm, and a waiter materialized by his elbow. The newjohn turned to me. "What are you drinking, Captain?"

"A Cassini's Divider," I replied, and handed my empty glass to the waiter.

He turned to the waiter. "Make that two."

Well, score one for the newjohn, I thought to myself. He's soaking up local color without being obvious about it. And he's paying for his lessons.

"What's in that drink?" he asked me.

"Potato vodka, soda water, and some fruit juices out of the Wheel's orchards. Some herbs, too, but I don't know just what kind. All locally grown. It's simply out of the question to import liquor from any of the inner planets. So we make our own with what we grow out here. By the way," I added, "I'm not keen on drinking with strangers, so let's introduce ourselves. I'm Dirk Swanscombe, originally from Earth. I usually answer to 'Dirk'."

"Glad to meet you. I'm Benedict Johnson. My friends call me 'Ben'."

The waiter returned with our drinks. Ben paid, then picked up his glass. "To your health," he said to me.

"May your suit never wear through," I responded.

He put down his glass and nodded at the mural overhead. "Bet that must seem dull to you. I imagine watching Saturn gets old pretty quickly."

Newjohn, do you ever have a lot to learn, I thought to myself. No one out here *ever* gets bored watching Saturn. I know a guy who lost an arm because he was watching Saturn when he should have been watching the rock he was working on, and he'd already been out here ten years then.

But all I said was, "Not really. Even the old hands who are near retirement still like to look at Saturn. Some even come in here because it's the next best thing to being in space.

"But where are you from? Mars?"

"No, I'm originally from Earth," he told me.

"I take it you're a space worker. Do you have much space experience?"

"Fifty hours, all together. That was at Three Planets Space Institute. Ever heard of it?"

"Yes," I told him. "I've hired several of their graduates. They seem to be a good, reputable school. But didn't you take a job on the Moon after you graduated? Learning to work in vacuum is tough enough without trying to learn to work in zero-g at the same time. Most

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people tackle them one at a time, instead of both together."

"Quite a few of my graduating class did take jobs on the Moon first, to get the vacuum experience while still having some gravity underfoot. But I got very good scores in both the theory and practice parts of my courses. I thought I could skip the Moon and come straight out here where the real action is."

Oh-oh, I thought. Not only will I never hire this newjohn, I'm going to make sure I never work anywhere near him either. We'll be lucky if he kills only himself. He's got to be taken down a peg or two for his own good.

I lifted my glass and drained it. "Ready for a refill? It's my turn to buy."

He finished his drink and responded, "Yes. And thanks."

I waved my hand and a waiter hurried up. "I'll have an Iceworm Special, and another for my friend here."

The waiter's face remained impassive, and he hurried off.

"Just what is an Iceworm Special?" the newjohn asked.

"An iceworm is a local delicacy. I thought you might want to become acquainted with it. The iceworms come from icebergs in the Rings."

"They're real worms?"

"Well, sort of. It's a well-known fact that the Rings are the fragments of a planet which broke up here millions of years ago. We don't know a great deal about the planet, but it seems to have had oceans and an atmosphere. And there was life in the oceans. Don't know if life had crawled out onto the land before the planet broke up. But we frequently find ice fragments in the Rings with these little worm-like creatures in them. They're highly esteemed here, just like truffles in France, for instance, or grasshoppers in Africa."

"But don't they have some scientific value?"

"Sure, but after scientists have cut up their thousandth iceworm, they're not going to learn much from the thousand-and-first. And it's just too expensive to ship them to museums on Earth. So now that the scientists are satisfied, we enjoy them ourselves. Clancy's Iceworm Special is one of the best-known in the whole Saturn system."

Clancy did the honors himself. "Good evening, Captain," he said as he lowered a tray next to our table and lifted off two enormous snifters. He placed one in front of me, and one in front of the newjohn. Then with a flourish he lifted the lid of an ice bucket and reached inside with a pair of tongs. He came up with a jagged lump of ice which had a worm coiled up inside it. The worm was about fifteen centimeters long. Its color was a pale green, except for two fiery red eyes and a dark red mouth at one end, and several gray-green bands about it. Clancy held the worm up for my approval.

"Looks like a fine specimen," I said.

Clancy carefully placed the ice into my drink. He then repeated the procedure with another lump of ice, holding it up for my inspection and then for the newjohn's. I nodded approval, and Clancy placed it in the newjohn's drink. He then handed me a bar chit which I signed and handed back.

All around me I could sense the attention of the other patrons. The buzz of conversation had dropped noticeably.

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People at nearby tables were unobtrusively hitching their chairs around so they could watch the newjohn and me.

I picked up a stirrer and swirled the lump of ice around in the glass. The iceworm seemed to glare at me with its angry red eyes, like an animal staring through the bars of its cage.

"The custom is to sip your drink slowly, while the ice melts," I told the newjohn. "Then when the iceworm is completely defrosted, you swallow it in one gulp."

The newjohn looked as though he wasn't too happy about the idea.

"That's really considered a delicacy here?"

"Absolutely," I responded. "Just think. That iceworm has been floating around out here in space for millions of years. At one time it was part of an ocean, with who knows what kinds of creatures living in it. That worm is the product of a completely independent evolution. We have absolutely no ancestry in common with it."

"Is it safe to eat? Isn't the different body chemistry poisonous?"

"All I can say is, I've never been bothered by it, nor has anyone else that I know of."

"How about alien bacteria?"

"Can't answer that one for you. Maybe the millions of years out here, at temperatures near absolute zero, killed them all. I don't know what the scientists found when they cut up their specimens. Anyway, I don't know of anyone who came down with an exotic disease after swallowing an iceworm."

Again I swirled the ice around in my glass. The chunk of ice was visibly smaller now. I glanced over at the glass in front of the newjohn. His ice was melting faster than mine, and a centimeter or two of iceworm was sticking out of the ice. A faint oily-looking trail was coming off the exposed end of the iceworm and forming a film on top of his drink.

I took a long, slow pull at the glass. The newjohn followed suit, but he seemed to have a hard time swallowing.

"Something wrong with your drink? Didn't Clancy mix it right? If not, I'll have him replace it for you."

"No. No, thank you. It's fine," the newjohn said, as though he had to force each word out through a constricted throat.

I took another sip. The newjohn reached for his glass, hesitated, then drew his hand back. I sipped again. The newjohn pushed his hand out, lifted his glass to his lips, and took a mouthful. He seemed to hold it in his mouth for a bit, then swallowed it with an audible gulp. He set the glass back down hard enough to make it ring.

I picked up the stirrer and slowly swirled my drink around. Bits of the iceworm were beginning to stick out of the lump of ice. With a convulsive gesture the newjohn picked up his stirrer and gave a couple of vigorous strokes to his drink. Both the head and tail of his iceworm were sticking out now. The defrosted portions writhed and coiled as the ice swirled around in the glass. The head kept bobbing up to the surface, as though it were trying to look at him with those flaming red eyes.

His face had gone white, and there was a thin sheen of sweat over his forehead. "Are you all right, Ben? Is it too warm in here?"

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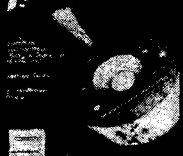

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"It is a bit warm," he said, "but I'll be okay."

"Looks like your iceworm is completely defrosted," I said to him. "Mine should be defrosted pretty soon too."

Through clenched teeth he said, "Are you really going to eat that thing?"

"After what Clancy charged me for it, you bet I am."

He glanced around the room and suddenly realized we were the center of attention. Conversation had almost ceased, and virtually every eyeball in the room was focused on us.

"What's everyone staring at us for?" he asked me, in a low voice.

I leaned forward across the table and answered him, as quietly as I could.

"This is a space workers bar. You knew that, even before you came in here. In fact, you wore an abrasion suit so you'd look like one of the regulars.

"Well, if you actually get a job in space, these are the people who are going to be working with you. These are the people whose lives will be at stake if you get careless, or pull some dumb stunt.

"They're all very much interested in finding out what kind of stuff you're made of. Are you a real space worker they can count on, or are you just masquerading in an abrasion suit that you've never worn in vacuum?"

I hoisted my glass in salute to the newjohn. "May your air hose never crack," I toasted.

Then I raised the glass to my lips and took a sip. Next I tilted the glass back and caught the head of the iceworm between my lips. I sucked it into my mouth, then washed it down with a big swallow from the glass.

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By now the newjohn was turning a bit green. The sweat was rolling down his face and soaking the collar of his suit. But he was still game. I have to give him that. He raised his glass to me.

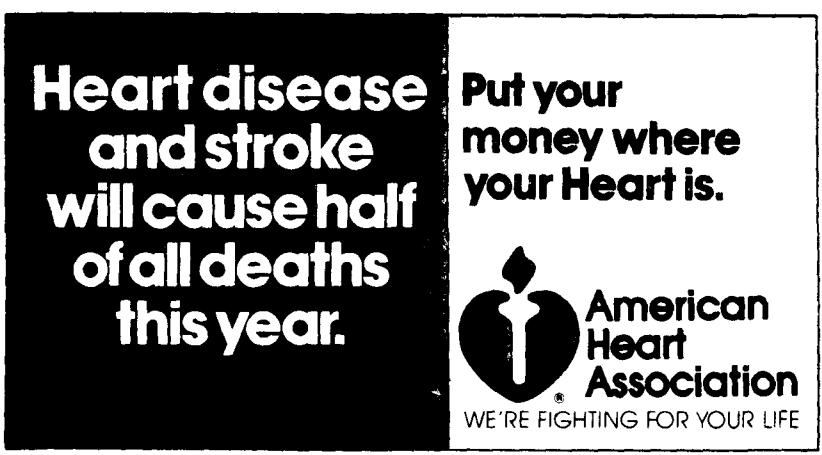
"May your suit never wear through."

He looked around the room, at all those eyes staring back at him. Then he raised the glass to his lips. At first it seemed they didn't want to open. But finally he got them open a crack, and he inhaled the iceworm as I had. Then he took a big swallow from the glass, but from the look on his face I could tell he hadn't gotten that iceworm down. There wasn't much of his drink left. But he tried to use it to wash down the iceworm. The iceworm must have gotten stuck in his throat, because he closed his eyes and swallowed, hard, a second time, even after he had drained his glass.

A few people applauded him, and a few more cheered. Several space workers from nearby tables came over to greet him. The newjohn stood up and shook their hands. But he seemed to be sort of preoccupied. Somebody offered him another drink, but he turned it down. I could see the sweat was still pouring out of him, and he was swallowing hard. All of a sudden he broke away from the group at our table and charged for the door, with his head down and one hand clamped over his mouth. I heard a few shouts of "Sorry to see you go," and "Too bad you have to leave so soon," but most of the people in the room just laughed as the newjohn disappeared through the doorway.

Well, I stuck with my decision. I never hired him, and so far as I know I've never worked near him. Other people have hired him, though, and they tell me he's worked out pretty well. Once he realized he didn't know everything already, he managed to learn quite a bit. So maybe that Iceworm Special saved his life.

Oh, the iceworm? That was just a piece of spaghetti that Clancy had colored to look as unpleasant as possible. ■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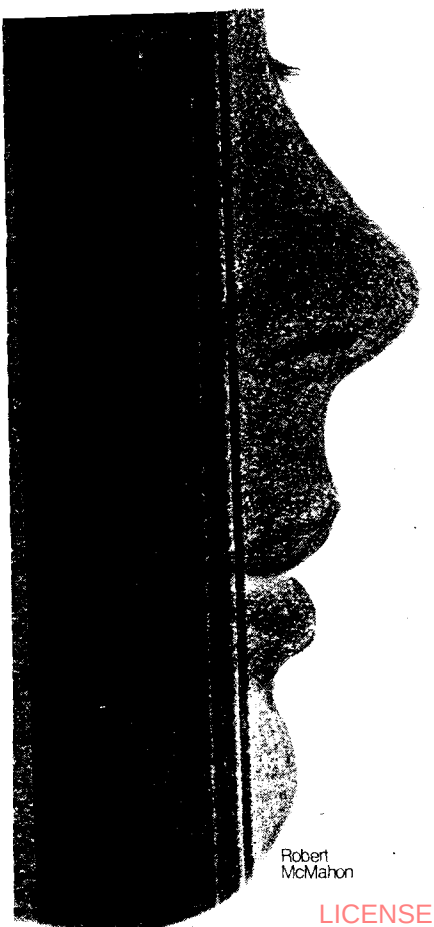

Robert
McMahon

Barriers between people are often self-inflicted—when each must guess what the other thinks.

The sun was barely up as I left the cabin that morning, but it was already promising to be a beautiful day. Some freak of nature had blown away the usual cloud cover and was treating the world—or at least the middle Appalachians—to an absolutely clear blue sky, the first I'd seen in months. I admired the sky and the budding April greenery around me as I made my way down the wooded slope, long practice enabling me to avoid trees and other obstructions with minimal effort. It was finally spring, I decided, smiling my half-smile at the blazing sun which was already starting to drive the chill from the morning air. Had it not been for the oppressive silence in the forest, it would

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almost be possible to convince myself that the Last War had been only a bad dream. But the absence of birds, which for some reason had been particularly hard hit by the Soviet nuke/bac barrage, was a continual reminder to me. I had hoped that, by now, nearly five years after the holocaust, they would have made a comeback. Clearly, they had not, and I could only hope that enough had survived the missiles to eventually repopulate the continent. Somehow, it seemed the height of injustice for birds to die in a war over oil.

I had reached the weed-overgrown gravel road that lay southwest of my cabin and had started to cross it when a bit of color caught my eye. About fifty yards down the road, off to the side, was something that looked like a pile of old laundry. But I knew better; no one threw clothes away these days. Almost undoubtedly it was a body.

I regarded it, feeling my jaw tightening. I'd looked at far too many bodies in my lifetime, and my natural impulse was to continue across the road and forget what I'd seen. But someone had to check this out—find out whether it was a stranger or someone local, find out whether it had been a natural death or otherwise—and that someone might just as well be me. Aside from anything else, if there was a murderer running around loose, I wanted to know about it. I took a step toward the form, and as I did so my foot hit a small pile of gravel, scattering it noisily.

The "body" twitched and sat up abruptly, and I suddenly found myself looking at a strikingly lovely woman wrapped up to her chin in a blanket. "Who's there?" she called timidly, staring in my direction.

I froze in panic, waiting for her inevitable reaction to my face, and silently cursed myself for being so careless. It was far too late to run or even turn my head; she was looking straight at me.

But the expected look of horror never materialized. "Who's there?" she repeated, and only then did I notice that her gaze was actually a little to my right. Then I understood.

She was blind.

It says a lot for my sense of priorities that my first reaction was one of relief that she couldn't see me. Only then did it occur to me how cruelly rough postwar life must be for her with such a handicap. "It's all right," I called out, starting forward again. "I won't hurt you."

She turned slightly so that she was facing me—keying on my voice and footsteps, I presume—and waited until I had reached her before speaking again. "Can you tell me where I am? I'm trying to find a town called Hemlock."

"You've got another five miles to go," I told her. Up close, she wasn't as beautiful as I'd first thought. Her nose was a little too long and her face too angular; her figure—what I could see of it beneath the blanket and mismatched clothing—was thin instead of slender. But she was still nice-looking, and I felt emotions stirring within me which I thought had died years ago.

"Are there any doctors there?"

"Only a vet, but he does reasonably well with people, too." I frowned, studying the fatigue in her face, something I'd assumed was just from her journey. Now I wasn't so sure. "Do you feel sick?"

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"A little, maybe. But I mostly need the doctor for a friend who's up the road a few miles. We were traveling from Chilhowie and he came down with something." A chill shook her body and she tightened her grip on the blanket.

I touched her forehead. She felt a little warm. "What were his symptoms?"

"Headache, fever, and a little nausea at first. That lasted about a day. Then his muscles started to hurt and he began to get dizzy spells. It wasn't more than an hour before he couldn't even stand up anymore. He told me to keep on going and see if I could find a doctor in Hemlock."

"When did you leave him?"

"Yesterday afternoon. I walked most of the night, I think."

I nodded grimly. "I'm afraid your friend is probably dead by now. I'm sorry."

She looked stricken. "How do you know?"

"It sounds like a variant of one of the bacterial diseases the Russians hit us with in the war. It's kind of rare now, but it's still possible to catch it. And it works fast."

Her whole body seemed to sag, and she closed her eyes. "I have to be sure. You might be wrong."

"I'll go and check on him after we get you settled," I assured her. "Come on."

She let me help her to her feet, draping the blanket sari-style around her head and torso and retrieving the small satchel that seemed to be her only luggage. "Where are you taking me?"

That was a very good question, come to think of it. She wasn't going to make it to Hemlock without a lot more rest, and I sure wasn't going to carry her there. Besides, if she was carrying a Russian bug, I didn't want her going into the town anyway. Theoretically, she could wipe the place out. That left me exactly one alternative. "My cabin."

"I see."

I had never realized that two words, spoken in such a neutral tone, could hold that much information. "It's not what you think," I assured her hastily, feeling an irrational urge to explain my motives. "If you're contagious, I can't let you go into town."

"What about you?"

"I've already been exposed to you, so I've got nothing to lose. But I'm probably not in danger anyway—I've been immunized against a lot of these diseases."

"Very handy. How'd you manage it?"

"I was in the second wave into Iran," I explained, gently pulling her toward the slope leading to my cabin. She came passively. "They had us pretty well doped up against the stuff the Russians had hit the first wave with."

We reached the edge of the road and started up. "Is it uphill all the way?" she asked tiredly.

"It's only a quarter mile," I told her. "You can make it."

We did, but just barely, and I had to half-carry her the last few yards. I put her on the old couch in the living room and then went and got the medical kit I'd taken when I cleared out of Atlanta just hours before the missiles started falling. She had a slight fever and a rapid pulse, but I couldn't tell whether or not that was from our climb. But if she'd really been exposed to one of

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those Sidewinder strains, I couldn't take any chances, so I gave her one of my last few broad-spectrum pills and told her to get some rest. She was obviously more fatigued than I'd realized, and was asleep almost before the pill reached her stomach.

I covered her with her blanket and then stood there looking at her for a moment, wondering why I was doing all this. I had long ago made the decision to isolate myself as much as possible from what was left of humanity, and up 'til now I'd done a pretty good job of it. I wasn't about to change that policy, either. This was only a temporary aberration, I told myself firmly; get her well and then send her to Hemlock where she could get a job. Picking up the medical kit, I went quietly out.

It was late afternoon when I returned with the single rabbit my assorted snares had caught. The girl was still asleep, but as I passed her on my way to the kitchen she stirred. "Hello?"

"It's just me," I called back to her. I tossed the rabbit on the kitchen counter and returned through the swinging door to the living room. "How do you feel?"

"Very tired," she said. "I woke up a couple of times while you were gone, but fell asleep again."

"Any muscle aches or dizziness?"

"My leg muscles hurt some, but that's not surprising. Nothing else feels bad." She sat up and shook her head experimentally. "I'm not dizzy, either."

"Good. The tiredness is just a side effect of the medicine I gave you." I sat down next to her, glad to get off my feet. "I think that you're going to be all right."

She inhaled sharply. "Don! I almost forgot—did you get to him in time?"

I shook my head, forgetting how useless that gesture was. "I'm sorry. He was already dead when I found him. I buried him at the side of the road."

Her sightless eyes closed, and a tear welled up under each eyelid. I wanted to put my arm around her and comfort her, but a part of me was still too nervous to try that. So I contented myself with resting my hand gently on her arm. "Was he your husband?" I asked after a moment.

She sniffed and shook her head. "He'd been my friend for the last three years. Sort of a protector and employer. I'll miss him." She swallowed and took a deep, shuddering breath. "I'll be okay. Can I help you with anything?"

"No. All I want you to do right now is rest. I'll get dinner ready—I hope you like rabbit. Uh, by the way, my name's Neil Cameron."

"I'm Heather Davis."

"Nice to meet you. Look, why don't you lie down again. I'll call you when dinner's ready."

Supper was a short, quiet affair. Heather was too groggy and depressed to say or eat much, and I was far too out of practice at dinner conversation to make up for it. So we ate roast rabbit and a couple of carrots from last summer's crop, and then, as the sun disappeared behind the Appalachians, I led her to my bedroom. She sat on the edge of the bed, a puzzled and wary look on her face, as I rummaged in my footlocker for another blanket. "You'll be more comfortable here," I told her.

"I don't mind the couch," she murmured in that neutral tone she'd used on me before.

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"I insist." I found the blanket and turned to face her. She was still sitting on the bed, her hands exploring the size and feel of the queen-size mattress. There was plenty of room there for two, and for a moment I was tempted. Instead, I took a step toward the door. "I've got another hour's worth of work to do," I said. "Uh, the bathroom's out the door to the left—the faucets and toilet work, but easy on the water and don't flush unless it's really necessary. If you need me tonight, just call. I'll be on the couch."

Her face was lifted toward mine, and for a second I had the weird feeling she was studying my face. An illusion, of course. But whatever she heard in my voice apparently satisfied her, because she nodded wearily and climbed under the blanket.

Leaving the bedroom door open so I could hear her, I headed for the kitchen, tossing my blanket onto the couch as I passed it. I lit a candle against the growing darkness and, using the water from the solar-heated tank sparingly, I began to clean up the dinner dishes. And as I worked, not surprisingly, I thought about Heather Davis.

All the standard questions went through my mind—who was she, where did she come from, how had she survived for five years—but none of them was really uppermost in my mind. Five years of primitive hardship and self-imposed solitude should have pretty well wiped out my sex urge, or so I would have thought. But it was all coming back in a rush, and as my lust grew my thoughts became increasingly turbulent. I knew she would accept me into her bed—if not willingly, at least passively. In her position, she couldn't risk refusing me. Besides, I'd given her food and shelter and maybe saved her life. She owed me.

And then I glanced up, and all the passion left me like someone had pulled a plug. Reflecting dimly back at me from the kitchen window, framed by the bars I'd installed for security, was my face. I'd lived with it for over five years now, ever since the Soviet nerve gas barrage near Abadan that had somehow seeped through my mask, but it still made me shudder. The reactions of other people were even worse, ranging from wide-eyed stares to gasps of horror, the latter especially common among women and children. Frozen by some trick of the gas into a tortured grimace, the left side of my face looked more like a fright mask than like anything human; the right side, normal except for three parallel scars from a mortar fragment, only made the other half look worse. My hair and beard followed the same pattern: a normal chestnut brown on the right, pure white on the left. And if all that weren't enough, there was my left eye; mobile and still with perfect vision, it had turned from brown to a pale yellow, and sometimes seemed to glow in the dark.

I stared at my reflection for a long minute before returning to my work. No, I couldn't take advantage of Heather's blindness that way. It would be unfair of me to go to bed with her when she couldn't tell how horrible I looked. Somewhere in the back of my mind, I was aware that this was the same argument, in reverse, that I used to avoid approaching any of the sighted girls in Hemlock, but that was irrele-

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vant. The discussion was closed.

I finished the dishes in a subdued frame of mind and then headed toward the front door. As I reached it, I heard a muffled sound from the bedroom and tiptoed in to investigate.

Curled into a fetal position under the blanket, her back to the door, Heather was crying. I stood irresolutely for a moment, then went in and sat down by her on the bed. She flinched as I touched her shoulder. "It's all right," I whispered to her. "You're safe now. It's all right. I won't hurt you."

Eventually, the sobs ceased and the tenseness went out of her body, and a few minutes later the rhythm of her breathing changed as she fell asleep. Careful not to wake her, I got up and went back to the doorway. There I stopped and looked at her for a moment, ashamed of my earlier thoughts. Heather wasn't just a warm female body put here for my amusement. She was another human being, and whether she stayed here an hour or a week she was entitled to courtesy and respect. It was the least I could do for her in the face of the barbarism out there. For that matter, it was the least I could do for *me*. There were enough savages in the world today; I had no desire to add to their number.

I closed the bedroom door halfway as a gesture to her privacy and went to finish my chores.

I stayed close to the cabin for the next couple of days, tending my garden and doing needed repairs and odd jobs. Heather's fever disappeared, and she recovered quickly from the effects of her journey and the medicine I'd given her. By the third morning after her arrival, I felt it was safe to leave her and go check on my snares. They were empty; but after a few hours of hunting with my bow and arrows I bagged a small squirrel, so at least we wouldn't go hungry. I swung by my "refrigerator" to pick up some vegetables and then returned to the cabin. Once there, I went straight to the bedroom to check on Heather.

She was gone.

I stood there for a moment, dumbfounded. The damn girl had cleared out, sure enough—and probably helped herself to everything she could get her hands on. I'd been a naïve fool to leave her here alone. "Heather!" I barked, the name tasting like a curse.

"I'm back here," a voice called faintly.

I started, and after a second I went outside and made my way to the rear of the cabin. Sleeves rolled up, Heather was standing by the hand pump that brought water from the nearby stream and sent it into the storage tank on the roof. She smiled in the direction of my footsteps, her face glistening with sweat. "Hi," she said. "I was just taking a break. How was the hunting?"

"Fair; we've got squirrel for supper," I told her, trying to keep my voice casual—hard to do when you're feeling like a jerk. "Also brought some corn. Why aren't you in bed?"

She shrugged. "I've never liked being a professional freeloader. Besides, you forgot to pump any water last night."

I hadn't forgotten—I'd just been too lazy—but I hadn't expected her to notice. The tank usually held enough water for three or four days, though I tried to keep it full. "Well, thanks very much.

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I appreciate it."

"No charge. You said you had some corn? Where did you get that?"

I started to point north, remembered in time the gesture would be wasted. "About a mile upstream there's a hollow right behind a small waterfall. The creek comes from underground at that point and stays pretty cold even in the summer. I use the hollow as my refrigerator. In winter, of course, it's more like a freezer."

"That's a good idea," Heather nodded, "although it's kind of far to go for a midnight snack. I'll bet it's fun keeping the animals out, too."

"It was, but I've pretty well got that problem solved." I suddenly realized I was still holding the squirrel and corn. "Come on, let's go inside. You look tired."

"Okay." She seemed to hesitate just a second, then stepped up to me and took my arm, letting me lead her back into the cabin.

Another surprise awaited me in the living room. Heather had neatly folded my blanket and laid it at one end of the couch; her satchel, some of its contents strewn around it, sat at the other end. In the middle lay a shirt I'd torn just that morning, neatly mended.

"I'll be darned," I exclaimed in delight, unaware of the pun until after I'd said it. "How did you know that shirt needed sewing?"

She shrugged. "I heard you getting dressed this morning, and right in the middle of it I heard something tear. You muttered under your breath and threw whatever it was onto the couch. When I got up I found the shirt and used a needle and thread from my sewing kit to mend it. I hope the thread doesn't look too bad there—I had no idea what colors I was working with."

I opened my mouth, but closed it again and instead reached for the shirt, my cheerful mood suddenly overshadowed by an uncomfortable feeling creeping up my backbone. Dimly, I remembered the sequence of events Heather had described, but it seemed too incredible that she should have pieced such subtle clues together that easily. Was it possible she wasn't quite blind?

There was a way to check. Still holding the shirt, I walked over to the window, loosening my belt with one hand until the big brass army buckle was free. The sun had come out from behind the clouds and light was streaming brightly through the glass. I turned slightly so that I was facing Heather and twisted my buckle, sending a healthy chunk of that sunlight straight at her eyes.

Nothing. She didn't flinch or even blink. Feeling a little silly, I let the loosened buckle flop back down against my leg and held up the shirt for a close examination, trying to pretend that that had been my reason for moving into the light in the first place. The seam was strong and reasonably straight, though the material bunched a little in places and the white thread was in sharp contrast with the brown plaid. "It looks fine," I told Heather. "It's exactly what I needed. Thank you for doing it for me."

Her face, which had been looking a little apprehensive, broke into a tentative smile. "I'm glad it's all right," she said, and I wondered that I had ever doubted her handicap. Only a blind woman could ever face me and still

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smile like that. And even though I knew how undeserved that smile was, I rather liked it.

I cleared my throat. "I guess I'd better go skin the squirrel and start cooking it."

"Okay. First, though, come on back and show me how to tell when the water tank's full. I want to finish that pumping before dinner."

It was pretty clear that Heather was completely healed from whatever she had caught, but I decided to keep her at the cabin for a few more days anyway. My official reason was that it would be best to keep her under observation for a bit longer, but this was at least eighty percent rationalization, if not outright lie: the simple fact was that I found her very nice to have around. I had never before had the chance to find out how much easier primitive life could be with an extra pair of hands to help with the work. Despite her blindness, Heather pitched in with skill and determination, and if I somehow failed to give her enough to do she would seek out work on her own. One morning, for example, as I was weeding the garden, she came to me with a pile of dirty clothes and insisted that I lead her down to the stream and find a place where she could wash them.

But most of all, I enjoyed just being able to relax in the company of another human being. That sounds almost trite, I suppose, but it was something I hadn't been able to do for five years. And, while I'd buried my need for companionship as deeply as I could, I hadn't killed it, a fact my infrequent trips to Hemlock usually only emphasized. The people of that tiny community were helpful enough—their assistance and willingness to teach me the necessary backwoods survival skills had probably saved my life the first year after the war—but I couldn't relax in their presence, any more than they could in mine. My face was a barrier as strong as the Berlin Wall.

But with Heather the problem didn't exist. We talked a great deal together, usually as we worked, our conversation ranging from trivia to philosophy to the practical details of post-war life. Heather's knowledge of music, literature, and household tasks was far superior to mine, while I held an edge in politics, hunting, and trapping. Her sense of humor, while a little dry, meshed well with mine, and a lot of our moral values were similar. Under different circumstances I would have been happy to keep her here just as long as I possibly could. But I knew that wouldn't be fair to her.

My conscience finally caught up with me late one evening after dinner as we sat together on the couch. Heather was continuing her assault on the pile of mending I'd accumulated over the years; I was trying to carve a new ax handle. My heart wasn't really in it, though, and my thoughts and gaze kept drifting to Heather. Her sewing skill had increased since that first shirt she'd mended for me; her fingers moved swiftly, surely, and the seam was straight and clean. Bathed in the soft light of a nearby candle, the warmth of which she enjoyed, she was a pleasure to watch. I wondered how I was going to broach the subject.

She gave me the opening herself. "You're very quiet tonight, Neil," she

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said after a particularly long lull in the conversation. "What are you thinking about?"

I gritted my teeth and plunged in. "I've been thinking it's about time to take you to Hemlock, introduce you around, and see if we can get you a job or something with one of the families there."

The nimble fingers faltered for a moment. "I see," she said at last. "Are you sure I'm not contagious any more? I wouldn't want to get anyone sick."

"No, I'm certain you're completely recovered. I'm not even sure you had a deadly bug, anyway."

"Okay. But I wonder if it might be better if I stick around for another week or two, until the garden's going a little better and you don't have to spend so much time on it."

I frowned. This was going all wrong—she was supposed to be jumping at the chance to get back to humanity again, not making excuses to stay here. "Thanks for the offer, but I can manage. You've been a lot of help, though, and I wish I could repay you more than. . . ." I let the sentence trail off. Heather's face and body had gone rigid, and she was no longer sewing. "What's the matter? Would you rather go somewhere else instead of Hemlock? I'll help you get to anywhere you want."

Heather shook her head and sighed. "No, it's not that. I just . . . don't want to leave you."

I stared at her, feeling sandbagged. "Why?"

"I like being here. I like working with you. You don't—you don't care that I'm blind. You accept me as a person."

There was a whole truckload of irony in there somewhere but I couldn't be bothered with it at the moment. "Listen, Heather, don't get the idea I'm all noble or anything, because I'm not. If you knew more about me you'd realize that."

"Perhaps." Her tone said she didn't believe it.

There was no way out of it. Up 'til now I'd been pretty successful at keeping my appearance a secret from her, but I couldn't hide the truth any longer. I would have to tell her about my face. "If you weren't blind, Heather, you wouldn't have wanted to stay here ten minutes. I'm . . . my face is pretty badly disfigured."

She nodded casual acceptance of the information. Maybe she didn't believe it, either. "How did it happen?"

"I was a captain in the army during the Iranian segment of the Last War; you know, the Soviet drive toward the oil fields. They were using lots of elaborate nerve gasses on us, and one of them found its way into the left side of my gas mask." I kept my voice even; I was just reciting facts. "None of it got into the nosepiece or respirator, so it didn't kill me, but it left one side of my face paralyzed. I won't trouble you with any details, but the net effect is pretty hideous."

"I thought something must have happened to you in the war," she murmured. "You never speak of your life during that time. . . . Is that why you were here when the missiles came?"

"Yes. I was in a hospital in Atlanta, undergoing tests to see if my condition could be reversed. They hadn't made any progress when I saw the handwrit-

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ing on the wall and decided it was time to pull out. A friend of mine had told me about his cabin in the Appalachians, so I loaded some supplies in a jeep and came here. I beat the missiles by about three hours.''

''Oh, so this place wasn't originally yours. And I'd been thinking all along how terribly clever and foresighted you'd been to have built a cabin out here in case the world blew itself up.''

''Sorry. Major Frank Matheson was the one with all the foresight. He was also one of the best friends I ever had.'' That sounded too much like an epitaph for my taste; I was still hoping he'd show up here someday. But he and his wife had been in Washington when the missiles started falling. . . . I shook my head to clear it. ''Anyway, we're getting off the subject. The point is that I'm taking advantage of you by keeping you here. I think you'd be better off living in a community with other people.''

''Yes, I suppose you would think that.'' Heather's lip curled, and for the first time since I'd met her I heard bitterness in her voice. ''You probably think it's been beer and skittles for me. Well, it hasn't.'' She glowered at some unknown memory; but even as I groped for something to say, her anger turned to sadness, and when she spoke again her voice was quiet. ''I went blind almost a year before the war; two weeks after my eighteenth birthday. I had a small brain tumor in the back of my head and was taking an experimental interferon derivative. Somehow, something went wrong with the batch they were giving me, and at about the same time I caught some kind of viral infection. The combination nearly killed me—they told me afterwards that I had delirium, high fever, and an absolutely crazy EEG trace for nearly forty hours. When I recovered, the tumor was shrinking and I was blind. That first morning, when I woke up . . . I thought I was either dead or insane.'' Her eyes closed, and she shivered violently. After a moment she continued. ''People hate me, Neil. Either hate me or are afraid of me, especially now that civilization's becoming a thing of the past.''

''Why would people hate you?'' I asked. ''I mean, that's a pretty drastic reaction.''

She hesitated, and a series of unreadable expressions flashed across her face. The moment passed, and she shrugged. ''I guess it's because I'm blind. It makes me an oddball and—well, something of a parasite.''

I snorted. ''You're no parasite.''

''You're very kind, Neil. But I know better.''

I shook my head, thinking of all the work she did around here. To me it was perfectly obvious that she was pulling her own weight, if not a little more. I wondered why she couldn't see that; and, in response, a fragment from a half-forgotten poem swam up from my subconscious. '' 'O wad some Pow'r the giftie gie us / To see oursels as others see us . . .' '' I murmured, trailing off as the rest of the piece drifted from my grasp.

Surprisingly, Heather picked up where I'd left off: '' 'It wad frae mony a blunder free us,

'' 'And foolish notion:

'' 'What airs in dress an' gait wad lea'e us,

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" 'And ev'n devotion!' "

She paused for a moment, as if listening to the last echoes from her words. "I've always liked Robert Burns," she said quietly.

"That's the only thing of his I know," I confessed. "My father used to quote it at us whenever our views of life were at odds with his. Despite your own estimation, Heather, the fact is that you're a very talented and hard-working woman and no one in his right mind is going to care whether you're blind or not. People won't think any less of you because of that."

A wry smile touched her lips. "You're not being consistent, Neil dear. That's exactly what you seem to think people are doing to you. If they can judge you by your face, why can't they judge me by my blindness?"

She had me there. I wanted to tell her that was different, but it was obvious she wouldn't buy any explanation like that—her blindness made it impossible for her to realize just how strongly my appearance affected everyone who saw it. I tried to think up some other reasoning I could use . . . and suddenly it dawned on me what I was doing. Here I was, sitting next to a lovely woman who was very possibly the last person on Earth who could endure my company—and I was trying to send her away from me!

Insanity has never run in my family, unless you count our military traditions. I'd tried being noble and honest, and my conscience was clear. If she wanted to think I was doing her a favor, that was up to her. "All right, Heather. If you're really sure you want to stay, I'll be more than happy to have you here. I have to admit that the thought of you leaving was pretty hard. But I had to—you know."

She reached over and touched my arm. "Yes. Thank you for being honest. And for letting me stay."

"Sure. Look, it's getting late, and we've got to get up by dawn. Let's get some rest."

"Okay." She paused. "Neil, were you ever married?"

I blinked at the abrupt change of subject. "Once, for a couple of years, when I was twenty-one. It ended in divorce. Why?"

She turned her head half away from me as if she didn't want me to see her face. "I was just wondering why you were still . . . sleeping on the couch instead of . . . with me."

The evening was rapidly taking on a feeling of unreality for me. I hadn't felt this strangely nervous since my first date in high school, and I opened my mouth twice before I got any words to come out. "I didn't want to impose on you." Damn, that sounded stupid! I tried again. "I mean, it wouldn't be fair for me to take advantage of you like that. You might just do it because you felt you owed it to me. I don't want it that way. I figured that if you ever wanted me like that you'd let me know somehow."

She nodded, her face still averted, and swallowed. "Neil . . . will you come to bed with me?"

I looked at her, my eyes sweeping her body, and for the first time I noticed that her hands were trembling. And suddenly I realized that she was not just offering an altruistic favor to a lonely hermit. In many ways Heather was an

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outcast, too, and she needed this as much as I did.

Never having been the romantic type, I didn't know the right words to say. So, instead, I blew out the candles, took Heather by the arm, and led her to the bedroom.

Afterwards she fell asleep next to me, one arm across my chest with her hand resting against my good right cheek. I watched the moonlight throwing shadows on the bedroom wall for a few minutes longer before drifting off myself, and I slept more restfully that night than I had in months.

The weeks went by, spring turning into summer with astonishing speed. Heather continued to take on a good deal of the day-to-day work of running our cabin, leaving me free to hunt, trap, and carry out repairs and maintenance that I'd been putting off for lack of time. We had our share of disagreements and misunderstandings, but as we got to know each other's moods and thoughts we began to mesh together, to the point where it sometimes seemed to me that we were becoming two parts of a single, well-oiled machine. Within the first four months I felt I knew this woman better than I'd known anyone else in my entire life. And, although I refused to use the word even to myself, I was quickly learning to love her.

And yet, there was something about Heather that bothered me, something so subtle that it was a long time before I could even put my finger on it. It wasn't anything big, and it didn't happen with any regularity, but sometimes Heather just seemed to know too much about what was going on around her.

I brooded about it off and on for several weeks, trying to remember everything Heather had ever said about her blindness. From her explanation I assumed her eyes and optic nerves were still healthy, that only the sight center of her brain had been affected, and for a while I wondered if her blindness was either incomplete or possibly intermittent. But neither explanation was satisfactory: if she was blind enough that she couldn't make out my face, she was too blind for any practical purpose; and if she occasionally regained her vision, her first reaction to my appearance would have been impossible for me to miss. Besides, there was no reason why she would keep such a thing secret, especially since she was so open about every other aspect of her life.

Eventually I gave up thinking about it and chalked up her abilities to the enhanced senses blind people are reputed to have. It really wasn't important, after all, and Heather and I had come too far for me to start wondering if she was hiding something from me. Having overcome the problems of my face and her blindness, I wasn't about to let a figment of my imagination become a barrier between us.

So we worked and sweated, laughed and occasionally loafed, and generally got by pretty well. As the crops in our garden grew large enough that Heather could take over some of the weeding duties, I began to expand the network of hand-made traps and snares that I had set up in the wooded hills around our cabin. I took the job seriously—I was after enough meat and furs for two people this year—and I ranged farther than usual in search of good sites.

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It was on one of these trips that I stumbled across the freshly killed man.

I stood—or, rather, crouched—by the still form lying face downwards in the rotting leaves, my bow and arrow half-drawn and ready as my eyes raked the woods for signs of a possible attacker. Nothing moved, and after a moment I put down the bow and began to examine the body. He was a middle-aged man whom I vaguely remembered as living in a shack some six miles west of Hemlock and a couple of miles south-west of my cabin. He seemed to have run and crawled here under his own steam before dying, probably no more than a few hours ago. The cause of death was obvious; a home-made knife hilt still protruded from his back just above the right kidney.

I rose slowly to my feet. The dead man couldn't have made it all the way here from his shack with that wound. He must have been either in the woods or on the road, which was only a quarter mile or so away from here, when he ran into . . . who? Who would murder a harmless old man like this? On a hunch, I knelt down and checked the pockets in the faded coveralls. Empty. No pocketknife, snare wire, fishhooks, or any of the other things he was likely to have been carrying. So the crime had probably started out as a robbery, perhaps turning into murder when the victim tried to escape. Not a local, I decided; more likely a wandering vagrant, who was probably long gone by now. Unless, of course, he'd gone down into Hemlock.

Or had found my cabin.

My heart skipped a beat, and before my fears were even completely formed I was racing through the woods as fast as I dared, heading for home. The cabin was not easy to see, even from higher spots on the surrounding hills, but it wasn't invisible, and there'd been only so much I'd been able to do to disguise the old drive leading up to it from the road. If anything happened to Heather. . . . I refused to think about it, forcing myself instead to greater speed. Maybe I could beat him there.

I was too late. Out of breath, I had slowed to a walk as I approached the cabin, and as I started the last hundred yards I heard male voices. Cursing inwardly, I nocked an arrow and made my way silently forward.

There were six young men standing casually around the front of our cabin, chatting more or less amicably with Heather, who was leaning back against the closed front door. The visitors were all of the same type: thin and hungry-looking, with hard-bitten faces that had long ago forgotten about compassion or comfort. Their transport—six well-worn bicycles—stood a little further from the cabin. In another age the men would have fit easily into any motorcycle gang in the country; the image of them pedaling along on bicycles was faintly ludicrous. But there was nothing funny about the sheath knives they were wearing.

I raised my bow and started to draw it, aiming for the man nearest Heather . . . and hesitated. I had no proof that they had killed the man I'd found, and until I did I couldn't shoot them down in cold blood. Besides, there were too many of them. I couldn't get all six before one of them got to Heather

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and used her as a shield.

Lowering the bow again, I tried to think. The smart thing to do would be to triple-time it down to Hemlock and recruit some help. But I didn't dare leave Heather alone. From the bits of conversation I could hear I gathered that Heather had told them I would be returning soon, and it was clear that they had decided to behave themselves until I showed up. But they wouldn't wait forever, and if they came to the conclusion she was lying things could turn ugly very quickly.

There were really no choices left to me. I would have to go on in and confront them, playing things by ear. If I bluffed well, or played stupid enough, there was a chance that they would take whatever food we offered them and leave without causing trouble. Even at six-to-one odds murder could be a tricky business; hopefully, I could convince them we weren't worth the risk.

One thing I was *not* going to do, though, was provide them with more weapons. Backing a few yards further into the woods, I found a pile of leaves and hid my bow and quiver beneath it. My big bowie knife went into concealment in my right boot. I then made a wide quarter-circle around the cabin so as to approach from a different direction. Taking a deep breath, I strode forward.

I deliberately made no attempt to be quiet, with the result that, as I broke from the woods, all eyes were turned in my direction. I hesitated just an instant, as if startled by their presence, and then walked calmly up to them.

Heather must have recognized my footsteps. "Is that you, Neil? Hello, dear—we have some visitors."

"I see that," I replied. I'd been wondering how I could tip Heather off that there could be trouble here, but I saw now that that wouldn't be necessary. Her voice was cheery enough, but her smile was too brittle and there were lines in her face that I knew didn't belong there. She already knew something was wrong. "Welcome, gentlemen; it isn't often that we get this much company."

Their apparent leader—who looked to be all of twenty-five—recovered first from the shock of my face. "Uh, howdy," he said. "My name's Duke. We were wondering if maybe you could spare some food."

"We haven't got much ourselves, but I guess we've got a little extra," I told him, studying the six as unobtrusively as possible. They were all younger than I was, by twenty years in some cases, which probably gave them a slight edge in speed and maybe stamina. All were armed with knives, and two of them also sported club-sized lengths of metal pipe. On the plus side, I was much better fed than they were and had had a good deal of combat training and experience. If I'd been alone with them, I would have judged the odds as roughly equal. But Heather's presence put me at a dangerous disadvantage.

I would have to remedy that, and while I still had the initiative was the best time to try. "Heather," I said, turning to face her, "why don't you see how much rabbit meat is left from last night."

"Okay," she breathed and started to open the door behind her.

But Duke was smarter than I thought. "Colby," he called to one of the boys

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nearest Heather, "go with her and give her a hand."

"That's not necessary," I said, as Heather hesitated and Colby moved to her side. "She's perfectly capable."

"Sure, man, but she *is* blind," Duke soothed. "Hey, Colby won't take nothing."

"Yeah," Colby agreed. "C'mon, kid, let's go in."

"No!" I barked, taking a step toward him. I knew instantly that I had overreacted, but I couldn't help it. Attached to Colby's belt were two sheaths, one of which was empty. From the other protruded a hilt whose workmanship I recognized.

Perhaps Colby saw me looking at his empty sheath, or maybe it was something in my voice that tipped him off. Whichever, when I raised my eyes to his face I found him staring at me with a mixture of anger and fear. "He knows!" he croaked, and reached for his remaining knife.

He never got a chance to use it. Even before the words were out of his mouth I had taken the single long stride that put me within range; and as the knifetip cleared the sheath, I snapped a savage kick to his belly. He doubled over, and I had barely enough time to regain my balance and turn around before I found myself surrounded. Out of the corner of my eye I saw Heather disappear into the cabin, one of the boys in hot pursuit, but I had no chance to go to her aid. Knives glinting, they moved in.

I didn't wait for them to get within range, but charged the closest one. He probably hadn't been attacked by an unarmed man in years, and the shock seemed to throw his timing off. I deflected his knife hand easily and gave him an elbow across the face as I passed him. The others, yelling obscenities, ran forward, trying to encircle me again. One came too close and got his knife kicked from his hand. He back-pedaled fast enough to avoid my next kick and drew the metal pipe from his belt. Clearly surprised by my unexpected resistance, my attackers hesitated, and I used the breathing space to pull my bowie knife from my boot.

For a second we stood facing each other. "All right," I said in the deadliest voice I could manage, "I'll give you punks just one chance. Drop your weapons or I'll carve you into fertilizer."

I'd never fought with a knife in actual combat, but the training was there, and it must have showed in my stance and grip. "Duke. . . ?" the boy I'd elbowed began.

"Shut up, Al," Duke said, but without too much conviction.

A sound from the cabin door caught my attention. Heather, struggling against an arm across her throat, was being forced outside by the punk who'd been chasing her earlier. "Not so fast, you son of a bitch," he called at me, panting slightly.

"Attaboy, Jackson," Duke crowed. He turned back to me, eyes smoldering. "Now you drop *your* knife, pal. Or else your broad gets it."

"Don't listen to him, Neil!" Heather shouted, her sentence ending with a little gasp of pain.

"Leave her alone!" I took a half step toward the door—and heard the faint sound of cloth against skin behind me.

Heather shrieked even as I started to

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turn, my left arm rising to block. But I was too late. The whistling iron pipe, intended for my head, landed across my shoulder instead, still hard enough to stun. I felt my legs turn to rubber, and as I hit the ground the world exploded in front of me and then went black.

I must have been out only a few seconds, because when my head cleared I was lying on my back with Duke and two of his pack standing over me. I wondered what they were waiting for, and gradually realized Heather was shouting at them. "Don't kill him! I'll make a deal with you!"

"You don't have nothing to offer that we can't take by ourselves," Duke said flatly, his glare still on me.

"That's not strictly true," Heather shot back, her voice tinted with both horror and determination. "Rape isn't nearly as enjoyable as sex with a willing woman. But I'm not talking about that. I can tell you where there's a big cache of food and furs."

That got Duke's attention, but good. He looked up at her, eyes narrowed. "Where?"

"It's well hidden. You'll never find it if you hurt either of us."

"Willy! Zac! What've we got?" Duke called.

I turned my head slowly toward the cabin as two of the boys came out the door. Heather, I saw, was no longer being held, though Jackson stood close by her with his knife drawn.

"Not too much in here," one of the two called back. "A couple days' worth of food, maybe, and some other stuff we can use."

Duke looked back down at me. "Okay, lady, it's a deal. Zac, go see if you can find some rope."

"You gonna tie him up out here?" Al asked. "Someone might find him."

"Naw, we're gonna take them inside. But I want his hands tied before he gets up." Duke grinned down at me. "You've got a good place here to hole up. We almost missed it."

I didn't bother to reply. A moment later Zac brought out most of my last coil of nylon rope, and in two minutes my hands were tied tightly behind my back. I was then dragged to my feet and marched at knifepoint into the cabin. Heather was already inside, her hands similarly tied.

"Let's put 'em in the kitchen," Willy suggested. "We can tie 'em to chairs there."

We were taken in and made to sit down, but they ran short of rope and only I was actually tied to my chair. Al suggested instead that Heather and I be roped to each other, but Duke decided against it. "She can't get into any trouble," he scoffed. Stepping over to me, he inspected my ropes and then drew his knife, resting its tip against my Adam's apple. "Okay, girl, I got my knife at your friend's throat. Give."

She gave them directions to my upstream "refrigerator" hollow. "You'll probably need to walk—there's too much undergrowth for bikes," she concluded.

"Okay, we'll go take a look." Duke sheathed his knife and glanced at the others. "Jackson, you and Colby stay here and keep an eye on things. And keep your paws off the food—hear?"

"Gotcha," Jackson said. Colby, mobile but still hunched over from my

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kick, nodded weakly.

Willy caught Duke's eye, glanced meaningfully in my direction. "Why bother with guards?"

" 'Cause if she's lying we want him in good shape, so we can take him apart for her," he said calmly. "Let's get started."

They left. Jackson and Colby hung around a little longer, until the sounds of conversation from the others faded into the distance, and then went into the living room where they'd be more comfortable. The swinging door closed behind them and we were alone.

I looked at Heather, wishing I had something encouraging to say. "Did they hurt you?" I whispered instead.

"No." She paused. "They're going to kill us, aren't they?"

There was no point in lying to her. "Probably. I blew it, Heather." The words made my throat ache.

"Maybe not. They took the four kitchen knives out of the drawers earlier. But they didn't find your bayonet."

I stared at her, hope and surprise fighting for supremacy in my mind. I'd long ago told Heather of the weapon and its hiding place, of course: it had been put on top of the wall cabinet over the kitchen sink precisely for a circumstance like this. There was only a three-inch-high gap between the cabinet and ceiling, an easy spot to overlook in a quick search. But how did Heather know Duke's punks had missed it?

For the moment, though, the answer was unimportant. Carefully, I tested the ropes that held me to the chair. It was a complete waste of time—the boys hadn't taken any chances. "There's no way for me to get over to it," I admitted to Heather at last.

"I know." Her face was very pale, but her mouth was set in grim lines. Swaying slightly, she stood up from her chair. Her feet were tied at the ankles, but by swiveling alternately on heels and toes she was able to inch across the floor. Turning her back to the counter that adjoined the sink, she used her tied hands to help push herself into a sitting position on top of it. The counter was, for a change, clear of dishes and other obstacles, and by twisting around Heather was able to rise into a kneeling posture. Positioning herself carefully, she bowed forward at the waist and stretched her hands upwards toward the bayonet.

She couldn't reach it.

"Damn, damn, damn," she whispered bitterly. She tried again, straining an inch or two higher this time, but she was still nearly a foot too short. Standing up would help, but there was no way, tied as she was, for her to get the needed leverage to manage such a move.

She seemed to realize that, and for a moment she knelt motionlessly. I could see tears of frustration in her eyes. "It's all right, Heather—" I began.

"Shut up, Neil." She thought for another minute and I could see her come to some decision. Moving cautiously, she turned so that she was leaning over the sink in a precarious-looking position. Then, taking a deep breath, she hit the window sharply with her elbow. It shattered with a loud crash.

I bit back my involuntary exclamation. Jackson and Colby stormed in, knives at the ready. "What the hell's goin' on?" Jackson demanded. He glanced at me to confirm that my ropes

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were still intact, then strode to the counter and roughly hauled Heather down. "What the hell were you trying to pull, bitch?"

She shook her head defiantly. He slapped her, hard, and turned to me. "What was she tryin' to do?"

A damn good question, especially as I hadn't the slightest idea. "She didn't say, but I think she was trying to get out," I said, hoping I was way off the mark. "I guess she forgot about the security bars."

He looked back at Heather, who was now looking sullen. From the doorway, Colby spoke up. "I'll bet she was looking for something. Let's check those cupboards."

Jackson dragged Heather back to her chair and then returned to the cabinet. I watched in helpless silence as he searched all the cabinet shelves and then, almost as an afterthought, climbed onto the counter and looked on top of it. With a triumphant war whoop, he pulled out the bayonet. "Trying to get out, huh?" he sneered at me. "Hot damn! Wait'll Duke sees this."

"Jackson," Heather said, speaking to him for the first time, "won't you let us go? Please? We can't hurt you anymore—you'll all be long gone before we could do anything."

"Screw you, sister." He looked at her a moment, as if wondering whether she should be punished for her escape attempt, then apparently decided against it. Swinging the bayonet idly, he nodded at Colby. "Let's get back to the cards. I don't think we'll have any more trouble from these two."

I squeezed my eyes shut, feeling crushed. The bayonet had been, at best, a very long shot, but somehow it had helped just to know it was there if I was ever able to get to it. Now that last chance was gone; and all because I hadn't had a convincing lie ready when it had been needed. I'd blown it for us twice.

A faint scraping sound made me open my eyes. Heather had stood up again and was once more inching her way toward the sink. "Heather—?"

"Shh!" she hissed. Her face held concentration, and not even a touch of the despair I was feeling. What was she up to?

I soon found out. Again she hoisted herself to a sitting position, on the edge of the sink itself this time. Instead of getting up on her knees, though, she extended her hands back toward the jagged spikes of glass in the broken window. Without hesitation—and without touching anything else—her fingers zeroed in on a particularly loose fragment. She tugged, breaking it free with only the slightest *snap*, and I finally realized what her plan had been. Hopping down with her prize, she started back toward me.

But we were still a long way from freedom. We now had something to cut the ropes with, but with my hands half-numbed from loss of circulation I knew I could never cut Heather's bonds without severing a vein in the process. Her hands were probably in the same condition, and even with her enhanced sense of touch she wouldn't do much better on my ropes. Still, it was our only hope.

Heather, however, seemed to have an entirely different idea. "Open your legs an inch," she whispered as she reached

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me. I started to object, but she seemed to know what she was doing, so I shut up and did as I was told. Turning so that her back was to me, she stooped down and placed the piece of glass directly between my knees. "Close 'em," she said.

"Wait a second, Heather, this is too dangerous," I objected, suddenly realizing what she had in mind. "Why don't you go around and cut my ropes instead?"

She ignored the suggestion. "Close your knees and hold it tight," she hissed furiously.

I did so. I was terrified for her hands, and my stomach was knotted at the thought of what was probably going to happen, but we were running out of time. If we did nothing before Duke returned, we were dead. Heather crouched a bit more, placed one of her bonds gingerly against the glass, and began to rub.

After all my fears it was like watching a minor miracle happen. Quickly, accurately, and with no wasted motion, Heather attacked the ropes around her wrists. Even with her hands undoubtedly numb she always seemed to know exactly where the ropes and glass were relative to her skin, almost as if she had eyes in the back of her head. Only once did she so much as scratch herself, and that was due to a momentary loss of balance that made her sway a little.

Seconds later her hands were free. Sitting down on the floor, she took the glass from between my knees and set to work on her ankle ropes. They were off almost immediately. For another few seconds she remained where she was, grimacing as the blood flowed back into her hands and feet. Then she stood up and walked around behind me, and I felt her fingers tugging and probing at the ropes on my wrists. "Come on, hurry up," I muttered impatiently.

"Just a minute," she whispered back, her voice strangely tense. Her examination finally over, she began to cut my ropes, moving much more slowly than she had earlier. Despite her caution, though, she nicked me twice and once even managed to cut her own finger. However she had worked her earlier miracle, things unfortunately seemed to be back to normal now.

But finally I was free, and as I rubbed life back into my tingling hands Heather cut the ropes on my feet and those tying me to the chair. Standing up carefully, I tiptoed over to the cupboard and utensil drawers to arm myself. A large pan lid and carving fork went into my left hand, the fork extending a couple of inches past the lid's rim; a one-piece wooden rolling pin, the housewife's traditional weapon, went into my right. I handed Heather a small metal frying pan and positioned her by the swinging door. "I'll announce myself before I come back in," I told her. "If anyone else comes through, clobber him."

"All right." She paused. "They're both still sitting on the couch playing cards. The bayonet is on the floor in front of Jackson."

I nodded. I still didn't understand Heather's strangely capricious radar, but for the moment the *how* and *why* were irrelevant. She seemed to know how it worked and when it could be trusted, and that was what mattered right now. "Good. This should only take a minute."

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"Be careful, Neil," she said, moving next to me for a quick hug.

I kissed her. "You bet, honey." Facing the door, I settled my nerves for combat. I'd nearly blown it for us twice now. This time was going to be different.

And it was.

The rest of the incident, though not without some danger, was straightforward and almost not worth mentioning. Jackson and Colby, taken completely by surprise, were easy to overpower and tie up. By the time Duke and the others came trooping back, Heather and the two prisoners were safely locked inside the cabin and I was outside with my bow and arrows and lots of cover. The boys put up some resistance, but they had no real chance, and after two of them collected arrows in the shoulder they finally gave up. I marched the whole group to Hemlock, confirming my story by taking the town leaders to the body in the woods. Frontier justice being what it is, the boys were found guilty of murder and hanged that evening.

The stars were shining through gaps in the cloud cover when I returned to the cabin. Heather had left a candle burning in the window and was waiting for me on the couch. "How did it go?" she asked quietly.

"They were convicted. I'm giving their bikes to the town; some of the men will come by tomorrow to pick them up."

She nodded. "I'm almost sorry for them . . . but I don't suppose we could have let them go."

"No. If it bothers you too much, try thinking about their victim." I sat down next to her. "Heather, we have to talk. I need to know how you were able to do the things you did today. I think you know what I mean."

"Yes." Her smile was bittersweet, with traces of fear and weariness, and I suddenly realized this wasn't the first time she'd had this discussion. "You're wondering if I'm really blind or somehow faking it." She nodded heavily. "Yes, I am completely and totally blind. My eyes are useless. But the . . . disease, accident, whatever . . . that blinded me did something strange to my brain's optic center. Somehow, I'm able to pick up the images that all nearby people are getting. In other words, I *can* see—sort of—but only through other people's eyes."

I nodded slowly as all sorts of pieces finally fell into place. "That was one possibility that never occurred to me," I said. "A lot of things make sense now, though. What sort of range do you have?"

"Oh, thirty or forty feet." She sounded vaguely surprised. I wondered why, and then realized that the usual reaction was probably one of shock or revulsion. I wasn't following the pattern.

"It must have been rough for you," I said gently, taking her hand in mine.

She shrugged, too casually. "A little. I haven't told very many people. They usually . . . aren't sympathetic."

"I can imagine. I'm glad you told me, though."

"I couldn't hardly keep it a secret after all that stuff with the ropes," she smiled faintly. Then she turned serious again, and when she spoke her voice was low and just a little apprehensive.

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"Do you want me to leave?"

"Don't be silly. My gosh, Heather, is that why you held out on me this long? You thought I would toss you out?"

"Well. . . ." She squeezed my hand. "No, not really; not after the first two months. By then I knew you cared for me and wouldn't treat me like a freak or something worse. But. . . ." Her voice trailed off.

But she couldn't override her own defenses, I decided. Not really surprising—a good set of defenses would be vital to protect her from both external and internal assaults. I thought of what it must have been like, waking up that first time to see your body from someone else's point of view. No wonder she'd almost gone insane.

And a horrible thought hit me like a sledge hammer.

Heather must have sensed my tension, for she gripped my hand tightly. "Neil! What is it?"

It took me two tries to get the words out through my suddenly-dry mouth. "Those hoodlums. If you could see through them . . . you saw my face."

She sighed. "Neil, I've known what you look like since the first night you brought me here. I saw your reflection in the kitchen window while you were washing the dinner dishes."

I stared at her, my head spinning. No wonder she'd cried herself to sleep that night! "But if you knew—?"

"Then why did I stay? I explained that to you months ago. Because you're a warm, generous man and I like being with you."

"But my face—"

"Damn your face!" she flared. "That thing has become an obsession with you!" She closed her eyes, and after a moment the anger drained from her expression, leaving weariness in its place. "Neil," she said, her quiet voice brimming with emotion, "I've wanted to tell you about my . . . ability . . . for a long, long time. But I couldn't, because I was afraid that you'd never believe I could care for you if I knew what you looked like. I was afraid you'd make me leave you."

Letting go of Heather's hand, I put my arm around her and held her close. All around me, I could feel reality going *tilt*. "I get the distinct feeling I've been acting like a jerk," I told her humbly. "I'm a little old to start changing all of my preconceived ideas around, though. I'll probably need a lot of help. You'll stick around and give me a hand, won't you?"

She took my free hand in both of hers and rested her head on my shoulder. "I'll stay as long as you want me here."

"I'm glad." I paused. "Heather, I think I love you."

Eyes glistening with tears, she treated me to the happiest smile I'd ever seen. Then she chuckled. "You mean you're just finding that out? My darling Neil, sometimes I think you're blinder than I am."

I denied that, of course. But now, after fifteen years with her, I sometimes wonder if she was right. ■

● Knowledge is the only instrument of production that is not subject to diminishing returns.

J.M. CLARKE

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Spider's told you about the long lag between the times we write these columns and the times you read them. He's so right. This column should appear in the July issue, and it's mid-January as I write. It's a new year, folks, with a new harvest of fiction and nonfiction ahead. I'm looking forward to it, and I imagine you are too.

How will we handle this harvest? You'll read what strikes your fancy. I'll read whatever comes my way—most of it, anyway—and if I think I can say something interesting, or if a book seems to warrant a trumpeter or a detour sign, I'll tell you about it.

Will I be a reviewer or a critic? Neither Spider nor I want to be the latter, perhaps because being a proper critic is too time-consuming or too difficult for people who have other work to do. And neither of us is too happy with being a reviewer as long after publication as *Analog*'s new lag time demands (though it *is* only a month longer than before). Perhaps it's good, then, that reviewing and critiquing shade into each other at times. We're reviewers, but we do say things that remain valuable even after a book is out of print—or so we hope. We criticize at times. We use books to lead into lectures on topics of wider significance. We compare authors, themes, approaches, national SFs. And more, all beyond pure reviewing, all things we hope make our columns readable. And too, we're writers; I suppose you may read our columns just to see how we think, how we fit into the larger picture you have of the SF world.

Looking back at the last three paragraphs, I find that they read rather like a letter from me to you. Perhaps that's not too bad a way to look at it. Consider each column a letter to a friend, a letter sharing books and thoughts and reflections, the kind of letter one fan might send another. (Awright! So I get paid

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for it.) If you wonder why you don't see me among the rest of your friends at the cons, I'll tell you—I'm simply not one to travel much, at least not on my own money. Now, if a con committee offered to pay my way . . .

But enough. The column's off to a nice congenial start, and it's time to get down to the proverbial brass tacks: books. The first of this year's harvest, the last of last year's. Let's start with one scheduled for February publication, Brian Aldiss's **An Island Called Moreau**. Aldiss has taken Wells's notion of a South Pacific island on which a mad scientist surgically modified animals to give them humanoid form and intelligence; supposed it truth; and put a second mad scientist, Dart, on the same island, surrounded by his predecessor's leavings. Dart is a thalidomide victim, ambulatory only thanks to a robot-like prosthesis. Like Moreau, he wants to create a super-race, but his tool is the more modern genetic engineering, and he has the support of Washington.

Also like Moreau, Dart is discovered by a shipwrecked narrator, Calvert Roberts, an Undersecretary of State who is the sole survivor of a shuttle crash. The parallels go on, too, but the antiparallels are more intriguing. Dart is a phocomelic, and his ideal of form is expressed in his creations' chant: "Four Limbs Long—Wrong Kind of Song . . . Four Limbs Short—Right Kind of Sport." Roberts is in danger both because he is the intruder and because he is normal. He reacts to Dart with predictable disgust, yet when he meets the seal folk on their islet in the harbor, he joins their orgies. What turns him off is less shape than pathology—a body is normal only as long as it is adapted to function in an environment.

Is this Aldiss's point? I suspect it is, for he reinforces it with Dart's super-race, hideous monsters by human standards, yet well suited to survive in the world as humans seem about to make it—a hell of radiation, scant food and air, and ruins. If this indeed is what Aldiss is saying, I applaud him, for he is all too right and too many people—writers and readers of SF, too—are prepared to accept the strange only as ugly. They ignore the truth that a fish built like a bird would be ugly, as is a horse with wings or a man in a spacesuit. Adaptation, fitness, defines beauty in nature, and usually in art as well.

Anyone want to argue that point?

Scheduled for April is a tale with a flavor of space opera, Cynthia Felice's **The Sunbound**. Long, long ago, a race of humanoids destroyed their world in war. The sole survivors were the crews of interplanetary solar sailing vessels, who then used the "gravity slips"—teleport gates left behind by a vanished Elder Race—to defy the Watchers, a species of hands-off exploiters(!). The sailors became space gypsies, living on their ships, surviving by trade, even visiting worlds restricted by the Watchers, such as Earth.

A gypsy comes to Earth to collect a cargo of industrial diamonds, meets and loves an Earth woman, Allis, dies of leukemia, and in dying gives her his communicator stone. It's another remnant of the Elder Race, one that gives its owner telepathic powers and can be passed on only in love. When the gypsies discover their fellow's death, they take Allis into space. A reluctant voyager, she becomes even more reluctant when she finds her Daneth had had a lover, Milani, and with her captained the ship. Jealousy and hate despoil her mind, until pirates strike and she does

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what she can to save the day, which is quite a lot.

There are several problems with the story. Felice has Allis get pregnant by the alien Daneth, for one, and human interfertility with an alien species has become so widely recognized as unlikely that we rarely see it anymore, except when accompanied by a swallowable explanation, which she leaves out. Does she think the human form and chemistry are universal? Worlds must differ, and so must adaptations, and hence forms and chemistries.

The second major problem is that when Allis finally returns to Earth, supposedly many years after her departure, even generations, due to time-dilation, transportation technology is unchanged. Roads still exist, and cars and trucks, and humans have not yet gone beyond present-day rudimentary space-faring. I don't believe it, and I doubt Felice would either if she stopped to think about it. She may have been trapped in the complexities of relativity and lost track of the difference between ship time and world time. Yet she stresses this difference at several points in the book, and she should have followed through.

Never mind. I'm quibbling, looking for a consistency you may not give a hoot about. It is a good story, competently written and unusually moving. Its best feature, in fact, may be the rare emphasis Felice puts on her characters' emotional lives, so that they breathe rather more audibly than those of most other writers.

Robert F. Young's **Starfinder** is already out, and I hope it is still available when you read this, though you may well have read it already. Parts appeared in *F&SF*, *If*, *Orbit 8*, and *Cavalier*, and if you saw them there, you must have wanted the book. It's a pleasure to read, a charming amalgam of SF and a last-century sea story. John Starfinder saves a space whale from conversion into a spaceship and takes off into the yonder of the Space-Time Sea. He learns to "speak" telepathically with the whale, which expresses itself in hieroglyphs, and he uses its strange command of exotic radiations to visit all eras, even unto the Utter Beginning. Along the way he finds a waif and, after confronting paradox and epistemology, gains a bride.

Young can be aggravating at times, for he has a taste for the outré in societies and sciences. But he has a gift, as well, and *Starfinder* shows it well. Don't miss.

And there's Barry B. Longyear's **Circus World**, guaranteed to appeal to everyone's childhood memories. Two centuries past, Momus was settled by the survivors of a derelict circus ship. They formed a society based on circus custom, with no government and only one law, a cumbersome recipe for making more. When the Tenth Quadrant (one of a hundred *Quad*rants?!) threatens to invade Momus, the Ninth sends Lord Allenby to convince the circus folk to ask for the Ninth's aid. He succeeds, but that is only half the book. The rest snapshots the consequences.

The book is less a novel than a series of novelettes and short stories that appeared in Analog's sister magazine (*Asimov's*, dummy!). They fit together well, however, and they are a joy to read. When treated as lovingly as in Barry's hands, the circus can give fiction, even science fiction, enormous appeal. Not that Barry relies on the circus alone for appeal. There is "Dueling Clowns" for the punsters, "The Quest" for those who like to see comment, however slight, on SF itself, and a host of warmly portrayed characters and human

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interactions.

Manly Wade Wellman's second Silver John novel is out now. It's **After Dark**, and it's the tale of what happens when John meets the Shonokin. Who is John? Let him answer:

"*You ask me what my name is,*
And what I'm a-doing here—
They call me John the Wanderer
Or John the Balladeer.

"*I've sung at shows and parties,*
I've sung at them near and far,
All up and down and to and fro,
With my silver-strung guitar."

He's wise in the ways of witches and ghoulies, too, and of things that go bump in the night.

Who are the Shonokin? They have no song, but they can be known. Nonhuman, here before the Indians, hidden among men for ages past, dwellers in gardinels. Encouraged by the results of Indian lawsuits, they plan to sue Washington to regain their ancestral lands—the works. To do this, they need money. To gain money, they hold a country concert and plan far, far darker deeds. However, the concert attracts John, and he meets a fan who takes him home to meet her Dad, who is threatened by the Shonokin's wish for his land. It seems they wish to extend a ley line across his place and thus gain the power to raise the dead. They want Dad's alexandrite, too, and Silver John holds the only hope.

It's classic ghost-story fantasy, told with a flavor that is half modern and half Appalachian hills. It's strong stuff, delicious in a way that fantasy set in alien times and climes cannot be. It's home-grown, set in homey traditions, and its shivers are thereby the more heart-felt.

What else can I say? Buy it.

Gene Wolfe's Book of the New Sun tetralogy is now in volume two: **The Claw of the Conciliator**. I praised volume one, *The Shadow of the Torturer*, which set the scene, introduced Severian, journeyman of the Torturer's Guild, and gave him the jewel that is the Claw. I praised it to the skies, and I am saddened that I can't do the same again. *Claw* is good, it's readable, it's a pleasure to cruise in, but it's not superlative. The problem may be that Wolfe does not give us nearly as much novelty as he did before. Severian journeys to and fro in his world, renewing old acquaintances but making few new. He reaches the House Absolute, where he is destined to become Autarch, but he leaves again, for he has the Claw to return to its rightful owners and he has yet to take up his torturer's post. He must also serve Vodalus the traitor, and there is more than a hint that the Claw and the New Sun—a literal star or an allegorical reigniting of the human spirit—are linked.

The book has a wealth of detail, so how can I describe it adequately? The book does not stand well alone; you'll need volume one in order to follow it, and you may need volumes three and four as well. More vaguely yet, books produce in me feelings akin to those that follow a meal—by the sense of my liver, I can tell whether what I ate was good, bad, or indifferent, satisfying or no. The feeling that followed this one reminded me of the one engendered by Peake's *Gormenghast* trilogy—good, even very good, in spots, full of wondrous scenes and marvelous events, but overall decidedly tedious. The resemblance may be helped by the Gormenghastly scale of the House Absolute.

I hope that your viscera are enough like mine that you follow my meaning. I also hope that volumes three and four

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will make me change my mind. I'll let you know.

That's six novels so far, four SF and two fantasy. How about some anthologies? I have here a collection of Walter Tevis's stories, **Far From Home.** Doubleday's cover letter says they reflect two phases in Tevis's writing career, and I suppose they do, though there aren't any credits. Part 1, phase 1, is well represented by a pair of modern ghost stories, "A Visit From Mother" and "Daddy," psychological and introspective. Part 2, phase 2, has more trivial and jolly tales, ranging from a deal with the devil to a pair of Farnsworth technological idiocies. I call them trivial because they don't carry the emotional freight of the stories in Part 1, but they are still entertaining enough, or more. Yet none of the stories are so striking that I can recommend the book whole-heartedly.

A better buy may be **Chrysalis 8**. Torgeson has done his usual good job of selection, and he has a new publisher, with hardcovers. He has Lee, too, and Malzberg, Carr, Card, St. Clair, and more; a good line-up. Among the best stories are Tanith Lee's "You Are My Sunshine," an account of how an interstellar liner is wrecked by a suntan freak, and Orson Scott Card's long "Hart's Hope," a very satisfying fantasy of magic and yearning. Worth noting are Mike Resnick's "Beachcomber," concerning a runaway robot, and Jayge Carr's "The King is Dead! Long Live—."

Another sort of bird entirely is **The Science Fiction of Mark Clifton**, an example of perhaps misguided academic attention. Clifton, a personnel interviewer, used his experience to write deft, witty, clever stories in the 1950s. He had a theme: that we see only what we are prepared or programmed to see, an idea first definitely formulated by the linguist Benjamin Whorf (his point dealt with the limits of language and translation). Clifton's tales have a strong flavor of mysticism as well, and a dark view of human nature.

Does Clifton's work deserve collection by an academic publisher? Judith Merril, Barry Malzberg, and Martin Greenberg all think so, crediting him with a formative influence on our field and praising his stories inordinately. Yet I find Clifton given to stereotyped people, reactions, attitudes, and contexts to the point that his tales and ideas become simplistic and naive.

Southern Illinois University Press has embarked on a series of SF-related titles, called "Alternatives." The Clifton book is number two. Another will be a version of the July 1939 *Astounding*. The first is **Bridges to Science Fiction**, a collection of essays prepared for the 1979 Eaton Conference on Science Fiction and Fantasy Literature. Most of the essays are by literary academics, and they read like it. The lone and welcome exception is Gregory Benford's piece on "Aliens and Knowability." The best of the others may be Eric Rabkin's "Fairy Tales and Science Fiction," in which he alternates nods and grumps, ending with "Both the fables called fairy tales and those modern descendants of them called science fiction, because they deal with the persistent problems of humankind, are worth not only the telling but the reading, too" (p. 90).

There is a link between *Clifton* and *Bridges*. More than one essay in the latter says that because we see only what we are programmed to see by biology

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and experience, we can have no hope of ever understanding the truly alien. They assume that the universe is broader than the human mind and deny that the human self can broaden to encompass the stranger. I don't like that denial of the human potential, and I doubt that Clifton would either. His stories, perhaps especially "Star, Bright," seem to show that he felt people *could* broaden to approach true empathy and understanding. Yet he rarely developed this idea beyond the superficial. He either avoided or was incapable (like most of us) of profundity.

The Science Fictionary is—obviously—a dictionary of SF. Ed Naha has compiled capsule descriptions of films, TV shows, authors, magazines, and awards, and done a fairly mediocre job of it. He spends the most pages on films (236), yet lists them in a less than useful way: "Jekyll and Hyde" has no entry, but "Adult Version of Jekyll and Hyde, The" does ("Dr. Jekyll goes into heat"). How can you expect to look anything up when the entries aren't cross-referenced by key words? Other problems show up in a brief check of the magazine treatments—Naha is quite up-to-date on *Omni*, but he fails to mention either that Stan Schmidt is *Analog*'s current editor or a writer, saying only that Ben Bova left in 1978 for *Omni*. The entries for *Amazing* and *Galaxy* are even more out of date.

Need I say that I wouldn't waste the money? In fact, after what I had to say about Naha's *Paradise Plot* last February, I would be rather skeptical of anything with his name on it. Still, I *will* look at him again, and I will let you know if he shows any signs of improving, or of being better edited.

Gerry de la Ree has brought out **The Sixth Book of Virgil Finlay**, an ample display of Finlay's astrological drawings, largely covers for *Astrology, Your Daily Horoscope,* and *Everywoman's Daily Horoscope*. It's nice work, some of Finlay's best, and the book belongs in any Finlay collection that pretends to be complete, even though it isn't, strictly speaking, SF. If you want it, though, you'd better hustle. Only 1300 copies were printed.

Tour of the Universe is unique and a gem. Set up as a scrapbook, it tells the story of how Leio and Caroline win a grand tour of the known universe, even unto the enemy Aurora-Magellan Federation. There are clippings, passports, tickets, resort brochures, guidebook excerpts, pictures, and diary entries that chart the couple's progress from their preparations through losing their shirts at the casino world to return. There is even a plot, for Caroline is an undercover agent assigned to check out Aurora-Magellan military preparations, and the whole turns out to be a novel in pictures (despite the diary text). As such, it is far more successful than Ace's illustrated novels, yet it is by no means a comic strip. It is relatively sophisticated, verisimilitudinous, and quite satisfying in the detail that rewards careful study. It must be a source of great pride to authors Edwards and Holdstock and to the thirteen British artists, most of them in their thirties, who worked on the pictorial matter. This is another one not to miss if you can possibly help it.

And finally, a curiosity—**The Death of Rocketry**. Remember the Dean Drive, so prominent in these pages years ago? It was a reactionless drive; it supposedly spun weights in such a way as to convert rotary motion into linear motion (*without* traction). And, of course, it was

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bunkum.

Death is the account of a variation on the Dean Drive. It says that Dean was deluded, but that this fellow, Robert Cook, isn't, even though his gadget bears a marked resemblance to Dean's. I don't believe it. Neither the supposed interest of NASA and United Airlines nor the photos of reactionless drives hanging from strings, on wheels, and on boats convince me; and the loud comparisons of Cook to Bruno, Galileo, et al., don't help. I'm such a skeptic on this matter that I'll have to see it to believe it. Well, maybe I'm not that hard-nosed, but I do insist on a solid, incontrovertible demonstration, such as Lee Correy cooked up for his *Star Driver*.

The best aspect of the book is its comparative discussion of other so-called reactionless drives, but even that isn't enough to make me keep *Death* on my bookshelf. What am I going to do with the book? I'm not going to pitch it in the stove, as you might guess. Instead, I'm going to hand it to one of the engineering students in my "Advanced Professional Exposition" course. I'll tell him (or her) that it's not a bad example of technical writing and that an analysis of the device it describes would be a worthy subject for the term project he'll have to do for me. Better yet, he might build a "working" model of the gadget and analyze that.

If I get a taker, and *if* he builds the thing, and *if* it works as advertised, you can be sure I'll let you know. Keeping it secret would be treason of the first magnitude, now wouldn't it?

* * *

Cosmos, Carl Sagan, Random House, $19.95, 365 pp. (Reviewed by Stanley Schmidt)

I discovered Carl Sagan while in graduate school, when a review in Analog led me to *Intelligent Life in the Universe*, his unique collaboration with I. S. Shklovskii. My first reaction to the book was that it was a lot of fun to read; my second, that it was a veritable gold mine of science-fictional ideas; and third, that I would love to try teaching an astronomy course with this as its central text, because I suspected it would bring the subject to life even for students who would not be roused by conventional texts. I soon got my chance, and my suspicion proved correct.

I would be less likely to use **Cosmos** as the nucleus of a course, but that doesn't mean I don't recommend it. The subject matter has much in common with the earlier book, though much updated and with a rather different slant, notably including a stronger emphasis on the *history* of science. The fun and richness of ideas are still there, and it was obviously produced with a much more generous budget, enabling it to feature a multitude of impressively reproduced color photographs and paintings, some of which you won't find elsewhere.

Cosmos is, of course, the printed incarnation of the PBS television series of the same name—but it is not just transcriptions of the thirteen scripts. Each version exploits the strengths and avoids the weaknesses of its own medium (though in a few cases the transition from one to the other left a small but visible scar). The book follows the same outline as the series, chapter by episode, from a general introduction to the structure and scope of the universe and an attempt to give a feel for our place in it, through observations on the

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other planets and what (and how) people have conjectured and learned about them, through stellar evolution and cosmology, to speculations on alien intelligence and contact and possible voyages in space and time. It concludes with some sobering reflections on our chances of surviving long enough to make those voyages. Its subject matter is as big as its title implies, and at one point near the end it manages to summarize all that in three paragraphs with "the sound of epic myth."

If I remember rightly, the television series was subtitled, very appropriately, "a personal voyage." The whole presentation is colored by Sagan's distinctive outlook; the organization of both series and book is rambling and informal. Where *Intelligent Life* was rather tightly organized around a single theme—the development of the universe from its raw beginnings through the evolution of intelligence and technological civilization—*Cosmos* begins with an imaginative survey of the whole universe and then settles down into closer explorations of assorted specific regions of space and time and what we think we know about them and how we came by that knowledge. There *is* an underlying organization—after the initial survey, the general trend is from Earth outward—but it's so loose and casual that the feeling is more one of browsing than of studying. This is not necessarily bad. An extremely important part of my own education came from browsing in encyclopedias, unfettered by assignments or deadlines, and this book has some of the feel of that, without the inconvenience of jumping from volume to volume. It just may trap some readers who would never sign up for a science *course* into dabbling here and there until they discover that somehow, insidiously, they've learned quite

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a lot. It doesn't get much into technical details—there are virtually no equations, and stellar spectral classes and Cepheid variables are not mentioned by name (though the knowledgeable reader will recognize the concepts). It does provide an extensive and varied bibliography for readers who would like to pursue topics in more depth.

The one significant problem I see with the book—and it's potentially a serious one, for some readers—is a slow, unfocused start. The first chapter, and portions of the next few, are *too* general and sweeping. They touch so many bases, without pausing long on any of them (and occasionally with undefined references to fairly esoteric terminology), that the reader may begin to wonder whether the book is ever going to make up its mind what it wants to talk about and really get into something specific. Once it does, the wait proves worthwhile. Sagan is in his glory when he settles into a concrete subject and hangs onto it—when, for example, he makes the life of Johannes Kepler or the surface of Mars or some remote imagined planet so vivid it seems more experienced than read about. The descriptions and the musings, both scientific and philosophical, get steadily better as the book progresses. The illustrations, drawn from a wide range of cultures and times (from ancient Alexandria and the Anasazi to Rick Sternbach and Voyager 2, for example) complement the text beautifully, and just might tempt you to splurge on the hardcover even if you'd normally wait for the paperback.

My concern, such as it is, is simply that the people who most need a book like this—the millions who are *not* already reading things like *Analog* and *Scientific American*—will not be sufficiently hooked by the beginning to stick around for the rewards that come later.

But I may be wrong. In view of *Cosmos*'s continued prominence on the best-seller list, perhaps I needn't worry. Maybe all those people *are* not only buying it, but reading it and understanding it and having their imaginations tickled by it.

I hope so. I also hope that *Cosmos* will be read by science fiction writers, especially those who sometimes think there are no more worlds to explore, no more *ideas* to fire the imagination. If they read this slowly and thoughtfully, with pen and notebook in hand, they will find a wealth of such ideas in its pages—some explicitly, and still more implicitly, for those who can push their imaginations a little beyond what Sagan says. ■

● Eavesdropping [on extraterrestrial intelligence] is fiendishly difficult, perhaps even more difficult than getting money from Congress to build a widget to try to eavesdrop with. Rumor is, however, that they give money to the CIA for such purposes.

DR. JOHN A. BALL

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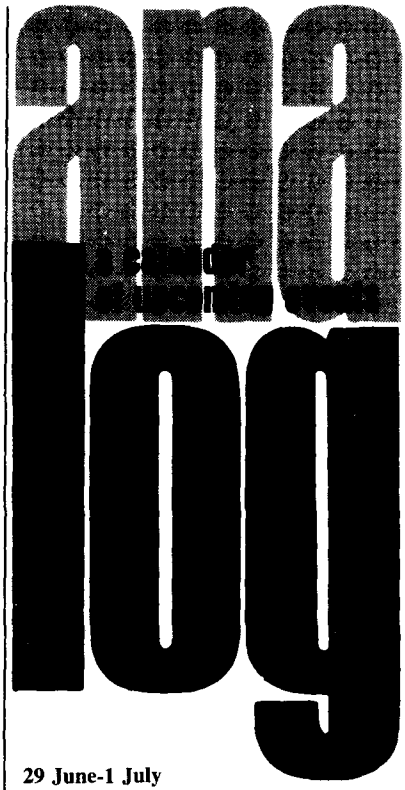

29 June-1 July
Annual Meeting of the Association for Computational Linguistics at Stanford, Calif. Info: Don Walker, Artificial Intelligence Center, SRI International, Menlo Park CA 94025. 415-326-6200 x 3071.

2-5 July
WESTERCON 34 (Western regional SF conference) at Red Lion Inn, Sacramento, Calif. Guests of Honor—C.J. Cherryh (Pro), Grant Canfield (fan). Info: Westercon 34, Box 161719, Sacramento CA 95816.

3-5 July
INCONJUNCTION I (Indiana Regional SF conference) at Holiday Inn I-70 East, Indianapolis, Ind. Guest of Honor—Philip José Farmer, Fan Guest of Honor—Ray Beam, Emcee—Wilson Tucker. Registration $10. Info: InConJunction I, Box 635, Galveston IN 46932.

10-12 July
ARCHON 5 (St. Louis-area SF conference) at St. Louis, Mo. Video, art show, hucksters, gaming, films, etc. Registration $12, $4 supporting. Info: Archon 5, Box 15852, Overland MO 63114.

17-19 July
ODYSSEY 81 (Simulation Games Conference) at University of New Hampshire, Durham, N.H. All kinds of gaming: miniatures, board gaming, and role playing. On-site dealer display. Info: Odyssey '81, R. Bradford Chase, UNH Simulation Games Club, Memorial Union Building, Durham NH 03824.

18-24 July
Eighth International Congress of Speleology at Western Kentucky University. Info: Secretariat, Department of Geography and Geology, Western Kentucky University, Bowling Green KY 42101.

14-16 August
STUCON I (German SF convention) at Stuttgart. Sponsored by Science Fiction Club Deutschland. Guests of Honour—Marion Zimmer Bradley, David A. Hardy, Helmut Gabriel. Registration (U.S.$)—$18. Info: Jurgen Mercker, Eichenweg 24, D-7016 Gerlingen, West Germany.

2-7 September
DENVENTION II (39th World Science Fiction Convention) at Denver Hilton, Denver, Colorado. Guests of Honor—C.L. Moore and Clifford Simak, Fan Guest of Honor—Rusty Hevelin, Toastmaster—Edward Bryant. Registration until 15 July 1981, $45 attending, $15 supporting; no mail-in registration after 15 July 1981. Registration at the door—$55. This is the SF universe's annual get-together. Info: Denvention II, P.O. Box 11545, Denver CO 80211. 303-433-9774.—ANTHONY LEWIS

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BRASS TACKS

Dear Dr. Schmidt:

"Brass Tacks" discussions are, inevitably, delayed and long-drawn. Perhaps I can give answers in advance on behalf of "Mercury's Missing Divot" (January 1981). I expect comment on several points:

Clearly, the time-scale could be critical.

Also, I call for melting to depth of a quarter-million square kilometers of territory. That figure stems from my assumption on the volume of the basin. I simplified this as conical and will stand by the assumed capacity. In fact, I picture its form as that of a soup-plate.

Could radiation bore so wide and deep as to slag down a province?

I'll lead off on this: the question connects with the shape of the basin. Of course, seismic heating worked with radiation—but don't sell the latter short. Isaac Asimov noted that a star's colossal output comes from its colossal size. Sol itself generates no more heat per kilogram than the living tissue of a rabbit! At Caloris there was stellar luminosity. Yet in one respect it was unstarlike. It came from an asteroidal volume: the scale was not 1.4 million but a mere 100 kilometers. The concentration is a million millionfold. The radiation worked at contact or near-contact range. Yes, its intensity dwindled logarithmically with the distance penetrated into Mercury . . . but from what a beginning! Meanwhile seismic heating worked upward from the crust. Mind you, both agents weakened abruptly some way from the center. This leads me to my picture of the basin. The fall in heating produced a rise in the contour of the basin—the curve from the bottom to its rim. There was more at work than inverse square law. Radiation drilled in more obliquely at a distance, and here the curvature of Mercury came into

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play. Seismic heating fell more smoothly. My guess is, at something between square root and cube root of distance. Its main effect was in the shattered regolith; the medium was critical.

Heat could be transferred. There was enough and to spare. To put the expenditure in perspective, it was *less* than is needed to boil an Antarctic icecap. There was vastly more than this on tap. The period of peak intensity is vital for the work of radiation. I equated this—quite arbitrarily—with the time in which the fireball quadrupled its volume; that is, added 50 percent to its diameter. That period was brief, yet by no means instantaneous. Its maximum is set by the lowest possible rate of expansion, velocity of escape—4.3 km./sec. for Mercury. We can be sure the growth was faster, but the time was of the order of a second, not measured in nanoseconds. The radiation, of course, worked beyond my arbitrary limit.

It volatilized rather than blasted an enormous impact crater. Here we come to the nitty-gritty. Suppose my assumptions are on the ball. The crater's shape was paraboloid; it reached 50 km. down and approximated the capacity of the basin now. Neglect any rock which boiled away beyond the lip of the crater. This went the same way home and left the same total vacancy behind it. . . .

On those assumptions, the crater was 450 km. across.

Enormous! Yet compare Copernicus on the Moon, which resulted from an impact energy several orders of magnitude lower, but is only one order of dimension smaller.

Molten rock poured into the hole, forming an even larger lake of lava. This rose to 9 km. below the general surface of the planet. Now, I take that figure to be the minimum depth of fusion across the area which became the bottom of the soup-plate. The molten fringe equaled the volume of the crater. We can work out the width of the molten ring around the crater. I make it 125 km. across. We have a circular plain 700 km. in diameter. I see depth of fusion as decreasing sharply outside the ring; there is a sharp rise to the rim of the soup-plate. Fusion was superficial here—measured in scores of meters at most, not kilometers.

NASA may already have observations from Mariner X which bear on this speculation.

My choice of high impact speed is another point. Look at the matter in this light. If we choose the low speed/high mass alternative, we are in this position. An asteroid 250 km. across comes in at the respectable rate of 30 km./sec. It displaces only one-half its own volume from the target area. Intuitively, this seems unlikely. The seismic shock took 45 seconds to pass out of the area it helped to fuse so deeply. By then, radiation had done its damnedest. If we set the fireball's growth-rate at 3 x V_e, it had already reached the dimensions of the basin. Yet mark—even at that it was still as dense as the air you are breathing now! And still, I think, glowed sullen red. I suggested that its shape would be largely determined by that of the impact crater. Yet there may have been a *leetle* blast across the surface: perhaps enough to entrain a few trillion tons of molten rock from the surround. This, too, must be subtracted from the volume of the crater with that which boiled away. Yes, that crater was under 450 km. across; and it didn't take long to drown. My guess is that the central plain was level in hours, but took centuries to set hard to its depths. Drainage across the rim would be more leisured and incomplete.

J.E. ENEVER

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Joe Enever will be glad to reply to J.R. Smith, M.D., who omitted his own address. Joe lives at Molehill Cottage, Margaretting Tye, Essex, England.

Dear Dr. Schmidt:

I particularly appreciated your editorial on crackpots because I also get a good deal of crackpot mail.

I wish, though, that you had made a distinction between the far-out idea that *might* be true and the idea that is really logically impossible and *has* to be wrong. I had a letter recently claiming that $\pi = 3.142$ (exactly). There's no need to look for the mistake, because it's too easy to show that π isn't equal to 3.142. Angle trisection is like that. It was proved (*not* long ago in Greece, but less than 200 years ago in western Europe) that a Euclidean trisection is logically impossible. On the other hand, claims of violation of established physical principles can turn out to be correct after all.

In other words, when eminent scientists claim that something physical is impossible, they are quite likely wrong; but when mathematicians claim that something cannot be done in mathematics, they are very likely correct. At least, that's the way to bet.

R.P. BOAS

Editor
The American
Mathematical Monthly
Evanston, IL

I thought I did *make that distinction, though perhaps you've made it a little more explicit—but now I must make another. Your basic claim I can't argue with, but if a logical proof is fairly complicated, it can contain hard-to-detect flaws. (I once saw a beautiful proof that all triangles are isosceles, in which the flaw was so subtle it escaped a whole class of good calculus students until it was pointed out to them.) And I doubt the wisdom of encouraging everybody to believe the result of an ancient proof without critically looking at the proof for themselves—or trying the same problem from scratch. Very few of the people I've heard asserting that trisection is impossible have even looked at the proof.*

Dear Stan:

Your editorial, "Advice For Crackpots," in the October 1980 Analog should win some kind of public service award. I would have been tickled pink to be identified as the "gentleman from Michigan" who came up with a trisection. Okay—almost. There is an additional procedure which, I hope, will exactly compensate for the error revealed by the mathematical proof for the initial trisection.

Two professors in the mathematics department at the University of Alabama in Birmingham said that they would look at what I had, but I could not miss the look they exchanged when I first approached them.

Right now, the error in the trisection is either minute or nonexistent, but that is secondary. The important consideration is recognition for the value of Crackpots in quotes. Most beginning crackpots are schooled into conforming citizens or driven into frustration. With self-discipline and integrity, a crackpot can follow his idea as far as it will go. A whole philosophy comes out of the need to think independently and the requirement for coping with the doubt of authority figures and the resulting self-doubts.

A few years back I discovered that all of us exhibit symptoms of the Who-the-hell-are-you? syndrome. A variation on this syndrome is the Who-the-hell-

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am-I? syndrome. Once you realize that it doesn't matter who the hell you are, you can concentrate on whatever it is you are dealing with.

Every crackpot has to manage his own background and handle his own timidness. Helpful phrases show up on placards, on walls, in books, out of the mouths of babes, and in graffiti. One phrase says, "Fear is the beginning of courage." I like the one that says, "If it was easy everybody would do it."

Anyway, this trisection has been building for 42 years; and had I not attempted it for these 42 years, I would still have arrived at this day 42 years older than the day I started.

Thanks for your ear and thanks for one hell of a magazine.

CEZAR TYJEWSKI
702 E. Emmett Street
Battle Creek, MI 49017

Consider yourself identified, Cez; my pleasure. Keep up the good work—and may you inspire others.

Dear Editor:

Your January 5, 1981, issue contains two articles which deserve attention. Both also deserve commendations.

First, the editorial "Cultural Anesthetics" punctuates the mental illness so prevalent in today's society. In Los Angeles, we've recently been informed, a record for the number of murders committed in one year has been broken. A much-loved musician was assassinated outside his apartment in New York a few weeks ago. Record attendance is made at movies containing more and more graphic violence and gore. We seem fascinated by this horror. And yet, we ask: how could the Romans endure their circuses?

Secondly, David R. Palmer's "Emergence" held my attention to the very end. The unique style and personality of the character is true to life. I teach a class of gifted and talented 11- and 12-year-olds. Their journals read much like Candy's. Palmer's insight is magnificent. His theory appears soundly based. Research in this area is still embryonic. The training (read "education") of our gifted youth is vital to the future. They are a natural resource craving (literally) nurturing. More attention needs to be focused on educational programs specifically designed for them. It is sad to know that so many of our gifted and talented students are being ignored because "they can make it on their own." Humbug! Have you any idea how many of these kids become bored, rebellious, frustrated, and just give up? More than most people would suspect, I'm sure.

Continue your quality efforts.

J. KOBELSKI
Moreno, CA

Indeed I do have some idea. When I was teaching college, I found that most of my very brightest students were either *people who had always been considered such,* or *people with a long record of being considered both poor students and discipline problems.*

Dear Editor:

An intercollegiate student society, Students for the Exploration and Development of Space (S.E.D.S.) has been formed, its first chapters having been established at M.I.T., Princeton, and Yale. The steady deterioration of the United States space program's goals and budget endangers our future and demands an organized response from our nation's campuses. The society has as its ultimate goal its establishment as a national student pro-space organization. We invite you and the students of your college to begin a chapter and join us in our cause.

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United, we can be a powerful political force which will help shape the future, hopefully reversing the current national trends. We see as our primary goal the enlightenment of our government, private industry, and the general populace regarding the benefits of a strong space program. S.E.D.S. will provide a forum for the discussion of space-related issues and plans for the future, and hopefully will spark the interest needed to develop this new frontier and secure our future.

Our immediate plans include submitting petitions to Congress and the President urging the restoration of the solar power satellite research budget. If you are interested in forming a chapter at your college and helping these efforts, please write to us for further information:

Peter H Diamandis
M.I.T. Chapter of S.E.D.S.
372 Memorial Dr.
Cambridge, MA 02139

The collegiate population of the United States must unite in the common goal of exploring and developing our only endless resource: space. Join us!

PETER H DIAMANDIS
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RICHARD E. SORKIN
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To the Editor:

I have been reading with disgust the letters concerning the conscription issue for several months. I am appalled by the shallowness of the anti-draft letters. With a wave of the hand, centuries of historical precedent, Constitutional law, and the thoughts of statesmen are dismissed. It is clear that no one wants to think about the issue in a serious way. Instead, people want to strike the childish pose of stamping the foot and shouting "I don't want to go. You can't make me."

It is not unusual for a society in decline to exhibit such attitudes. When a society becomes rich and powerful enough to coast for a generation or two, it is easy to forget about duty and sacrifice. This may be particularly true for America, to whom so much has been given with comparatively little effort.

What I do not understand is why *Analog* has lent itself to such a decadent viewpoint. Science fiction, with its promise of endless challenge and expansion, hardly seems the genre to foster an attitude best suited to people who want to stare at TV, party, get high, and coast through life undisturbed.

The nations of the past who were the spearheaders in exploration and innovation were also the nations that were contenders for political, military, and economic power. It is the same aggressive/acquisitive spirit. Vietnam and NASA went hand in hand, just as the isolationist and anti-technology movements now do. We will not reach the stars from a country that is collapsing into social decay.

BERTRAM MORRIS, PHD
Associate Professor
Psychology Department
University of North Carolina
Asheville, NC

It is not unusual for a person faced with serious advocacy of views significantly different from his own to attack them with inflammatory catchwords like "shallowness," "childishness," and "decadent," and utterly unfounded charges about the personal habits of those suggesting the dissenting views. We have recognized that it is possible to "think about the issue in a serious way" and come up with more than one answer. Go thou and do likewise—please. ■

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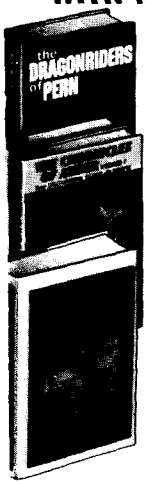

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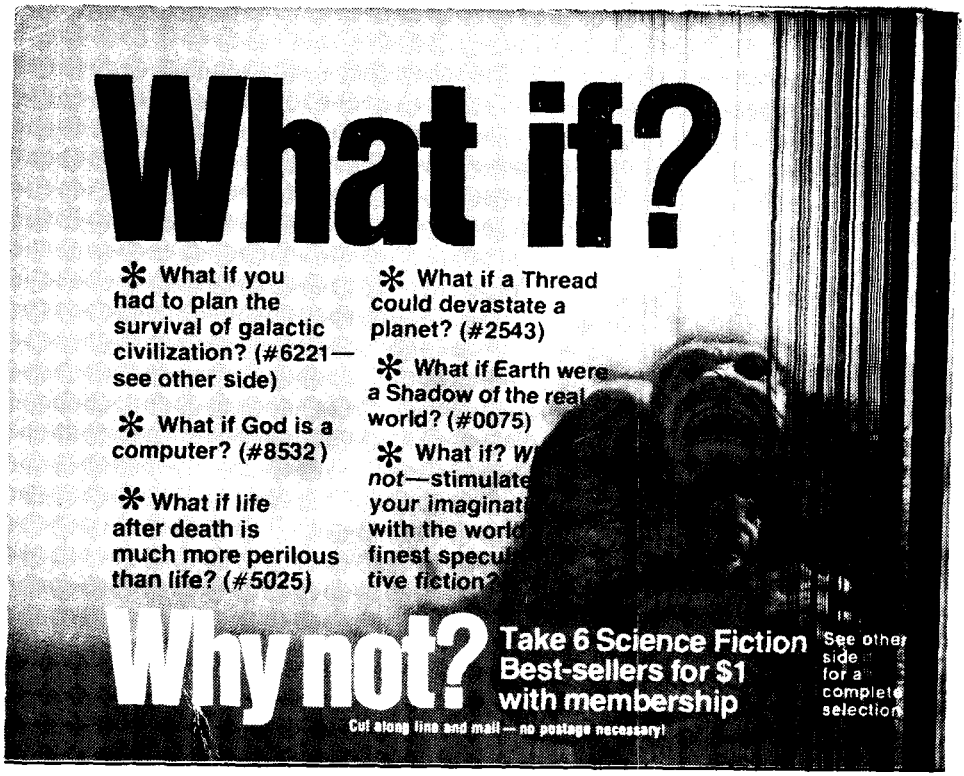
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